

This species is related to *G. Le Ratii* Schltr. from New Caledonia and the Loyalty Islands, but differs in its leaves.

#### AMPELIDACEAE

*Cayratia carnos*a (Lam.) Gagnepain in Lecomte, Not. Syst. i. 347 (1911).

**E r o m a n g a:** Dillon Bay, sea level, rain-forest, common, no. 246, May 15, 1928 (vine growing over tops of bushes; fruit black when ripe).—Already found on Efate; also Queensland, North and South Australia, New Caledonia, Loyalty Islands, Malaysia.—Vernacular name “Noo-u-mindeh.”

*Cayratia saponacea* (Seem.) Domin in Fedde, Rep. Spec. Nov. xi. 264 (1912).

**B a n k s I s l a n d s:** Vanua Lava, sea level, rain-forest, common, no. 501, July 18, 1928 (vine growing on the tops of rain-forest trees).—Also Queensland and Fiji Islands.

#### SAPINDACEAE

*Allophylus racemosus* (Linn.) Radlkofer in Engler & Prantl, Nat. Pflanzenfam. iii. 5, p. 313 (1895).

**B a n k s I s l a n d s:** Vanua Lava, sea level, seashore, common, no. 437, July 9, 1928 (vine growing over small bushes).—Also New Guinea, Arou Island, Malaysia.

*Allophylus ternatus* (Forst.) Radlkofer in Engler & Prantl, Nat. Pflanzenfam. iii. 5, p. 313 (1895).

**T a n n a:** Lenakel, alt. 200 m., rain-forest, common, no. 92, March 5, 1928 (small tree about 8 m. high).—Also New Caledonia, Queensland, North Australia, Loyalty, Tonga, Wallis, Samoa, Society, Marshall and Bismarck Islands and New Guinea.

*Allophylus timorensis* (DC.) Blume, Rumphia, iii. 130 (1847).

**E r o m a n g a:** Dillon Bay, alt. 300 m., rain-forest, common, no. 309, May 26, 1928 (small tree up to 8 m. high; fruit red when ripe, about 8 mm. in diam., leaves baked in native oven by means of hot stones, and when steaming applied to swellings).—Also New Caledonia, Marshall, Solomon and Bismarck Islands, New Guinea, Malaysia.—Vernacular name “Nau-mon-pe-vat.”

*Aphania ? neo-ebudica* Guillaumin, sp. nov.

Arbor magna, 18 m. alta, ramis teretibus primum rubiginosis deinde glabrescentibus; foliis paripinnatis 4-jugis, foliolis oppositis ovato-oblongis (2–12 cm. x 1.5–4.5 cm.) acute saepeque falciforme acuminatis basi rotundatis subsessilibus rigide chartaceis in utraque pagina glabris, nervis 6–12-jugis ad marginem anastomosantibus,

ut venae reticulatis subtus tantum prominulis, petiolo communi 1.5–4.5 cm. longo et racheos basi breviter rufo-puberulis. Inflorescentia terminalis, thyrsoides, ad 25 cm. longa, rubiginoso-puberula, cymulis 2–4-floris, floribus campanulatis, bracteis rubiginoso-puberulis linearibus, pedicellis basi articulatis, sepalis 5 anguste lanceolatis extra rubiginoso-puberulis, pedicellis aequilongis, petalis 4–5 transverse ovatis apiceque subtruncatis, sepalis brevioribus extra glabris intus basi glabra excepta breviter pilosis apicem versus puberulis, disco crasso glabro, staminibus 5–7 sepalis aequilongis, filamentis brevibus subulatis glabris, antheris cordiformibus basifixis papillosis, germine 2-loculari rubiginoso-piloso, stylo brevi apice sulco suturali stigmatoso utrinque notato, ovulis in quoque loculo singulis, fructibus . . .

**E r o m a n g a:** Dillon Bay, sea level, rain-forest, common, no. 335, May 29, 1928 (large tree up to 18 m. high; fruit eaten by natives who relish it).—Vernacular name "Tow."

Though this species resembles in its aspect much an *Erioglossum*, it will have to be referred to the genus *Aphania*.

#### **Alectryon** sp.

**A n e i t y u m:** Anelgauhat Bay, sea level, rain-forest, common, no. 923, March 19, 1929 (large tree up to 15 m. high). **E r o m a n g a:** Dillon Bay, sea level, rain-forest, common, no. 364, June 4, 1928 (large tree up to 25 m. high; pods brown).—Vernacular name "Novo metu."

#### **Cupaniopsis neo-ebudensis** Guillaumin, sp. nov.

Arbor 20 m. alta, ramis glabris; foliis breviter pinnatis 2–3-jugis breviter (1.5–2 cm.) petiolatis, foliolis oppositis ovato-lanceolatis (5–7 cm. x 2–3 cm.) apice obtusis basi cuneatis chartaceis, nervis lateralibus circa 10 tenuissimis, breviter (circa 5 mm.) petiolulatis; thyrsi terminales, folia superantes, brevissime pilosi, densiflori, alabastris globosis pedicello usque ad 3 mm. longo suffultis, bracteis minimis, sepalis 5 ovatis extra dense brevissime pilosis intus glabris, petalis albis cuneatis apice cuneatis intus medio dense pilosis sepalis vix longioribus, disco pentagono glabro, staminibus 8, filamentis geniculatis in parte discum superante sparse pilosis, petala duplo superantibus, antheris cordatis, germinis rudimento ovoideo apice attenuato dense appresse piloso 2-loculari.

**E r o m a n g a:** Dillon Bay, alt. 300 m., rain-forest, common, no. 381, June 8, 1928 (tree up to 20 m. high; flower small, petals white).—Vernacular name "Nar-vu-vat."

This belongs undoubtedly to the sect. *Macroplectrum* which is represented in Australia and New Guinea.

**Cupaniopsis** sp.

**A n e i t y u m**: Anelgauhat Bay, alt. 300 m. rain-forest, common, no. 842, March 2, 1929 (large tree up to 12 m. high; flowers white; bark light colored; wood durable).

**Cupaniopsis** sp.

**E r o m a n g a**: Dillon Bay, alt. 300 m., rain-forest, common, no. 386, June 8, 1928 (large tree up to 20 m. high).—Vernacular name "Nung arl."

**Cupaniopsis** sp.

**E f a t e**: Undine Bay, alt. 200 m., rain-forest, common, no. 219, April 27, 1928 (tree up to 15 m. high).

**Dodonaea viscosa** Jacquin, Enum. Pl. Carib. 19 (1760).

**E r o m a n g a**: Dillon Bay, alt. 300 m., poor red soil, bracken country, common, no. 296, May 24, 1928 (small tree about 6 m. high; leaves light green; flowers greenish yellow). **T a n n a**: Lenakel, alt. 150 m., rain-forest, common, no. 120, March 6, 1928 (shrub about 2 m. high).—Also New Caledonia, Loyalty Islands, Australia, Tasmania, Norfolk Island, New Zealand, Fiji, Tonga, Samoa, Cook, Society, Gambier, Gilbert, Marshall, Caroline, Mariana and Bismarck Islands, New Guinea, Malaysia.—Vernacular name "Ney-in-temer" (under no. 296).

**Harpullia arborea** (Blanco) Radlkofer in Sitz. Kgl. Bayer. Akad. Wiss. xvi. 404 (1886).

**T a n n a**: Lenakel, alt. 100 m., rain-forest, no. 138, March 8, 1928 (tree of many stems about 15 m. high).—Also Solomon Island, Malaysia.

## ANACARDIACEAE

**Dracontomelum vitiense** Engler in De Candolle, Monog. Phaner. iv. 253 (1883).

**A n e i t y u m**: Anelgauhat Bay, sea level, rain-forest, common, no. 905, March 11, 1929 (large tree up to 12 m. high; fruit yellow when ripe, 3 cm. long, 3.5 cm. in diam.).—Already found on Efate; also Fiji and Samoa Islands.

**Rhus retusa** Zollinger apud Teysmann & Binnendijk, Cat. Hort. Bogor. 230 (1866).

**E f a t e**: Undine Bay, alt. 200 m., rain-forest, common, no. 222, April 27, 1928 (tree about 10 m. high, growing in gullies; flowers cream-colored).—Also Queensland, Malaysia and a special variety in New Guinea and on the Bismarck Islands.

**Semecarpus tannaensis** Guillaumin, sp. nov.

Arbor parva, ramis sat gracilibus teretibus, novellis sordide

rubiginose puberulis, foliis lanceolatis (usque ad 32 cm. x 7 cm.) rectis apice acuminatis basi cuneatis petiolo 2 cm. longo suffultis chartaceis glaberrimis, nervis lateralibus 16-18-jugis obliquis subparallelis prope marginem sursum vergentibus et cum sequente arcte conjunctis, venis prominentibus inter lateralibus non recte perpendicularibus sed undulatis. Paniculae masculae terminales, validae, pyramidales, foliis 2-plo longiores, sordide rubiginoso-puberulae, ramis robustis, bracteis subulatis 1.5 mm. longis, alabastris globosis sessilibus 3 mm. longis, floribus albis, calycis lobis triangularibus 1 mm. longis extra dense rufo-velutinis, petalis 5 lanceolatis 3 mm. longis extra rufo-velutinis intus glabris, staminibus 5 petalis aequilongis, filamentis glabris subulatis, antheris subcordiformibus, ovario globoso dense rufo-setoso, stylo 1, stigmate 2-lobo.

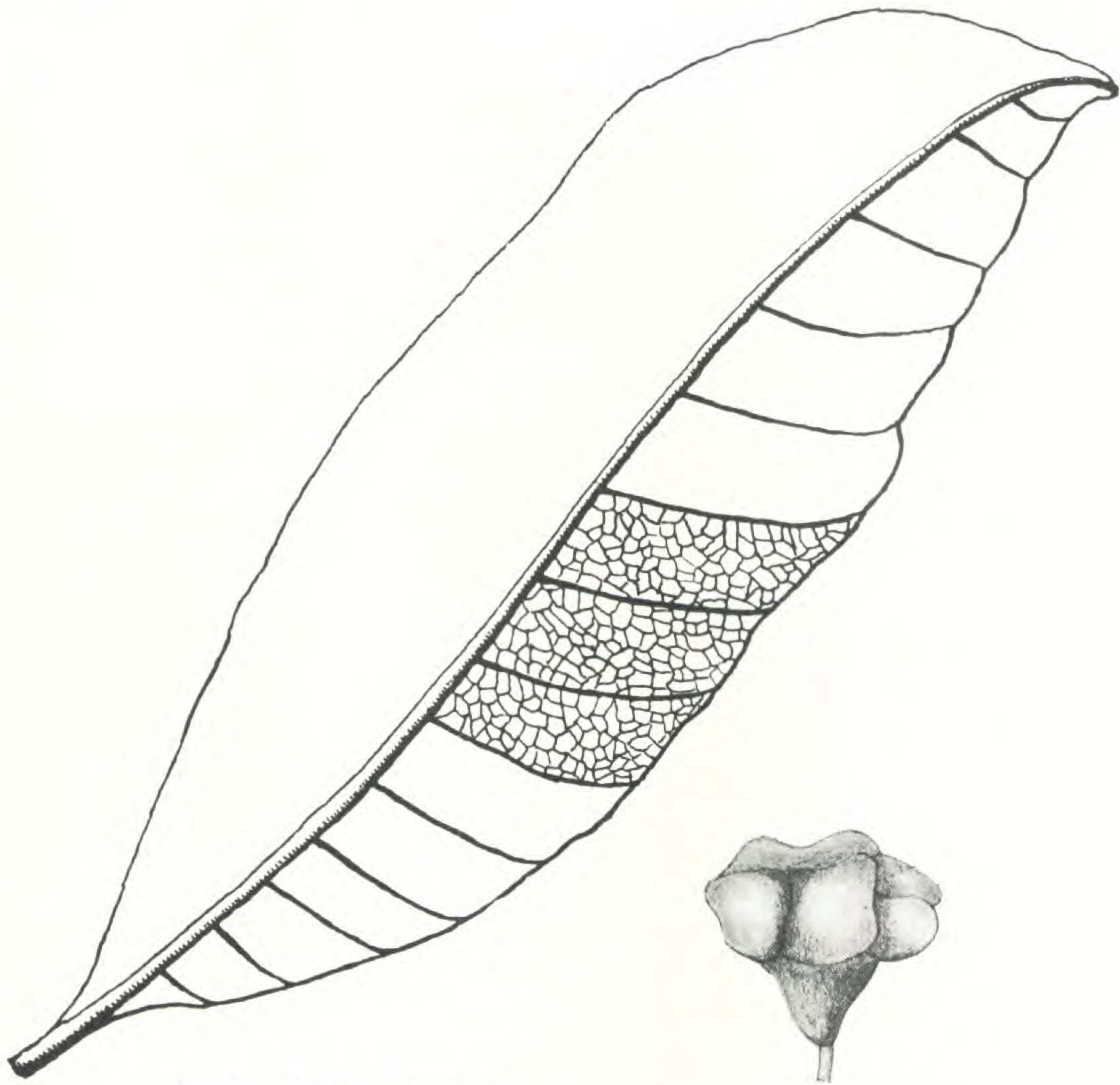


FIG. 3. Leaf and fruit of *SEMECARPUS* sp. nov? (nat. size).

T a n n a: Lenakel, alt. 100 m., rain-forest, common, no. 141, March 8, 1928 (specimens gathered from small tree; flowers white; sap is very caustic).

This species is near *S. laxiflora* K. Schum. from New Guinea and the Bismarck Islands, but is distinguished by the much more compact staminate inflorescence with more robust branches and much thicker flowers.

*Semecarpus* sp. nov.?—Fig. 3.

**E f a t e:** Undine Bay, alt. 100 m., rain-forest, common, no. 193, April 24, 1928 (specimens gathered on tree of 15 m.; sap of tree very caustic). **A n e i t y u m:** Umage, alt. 30 m., seashore, common, no. 997 (coll. *J. P. Wilson*), Sept. 1929 (small tree; leaves large; flower large, brown; fruit dark brown, 3 cm. long, 2.5 cm. in diam.).—Vernacular name “Neuclad.”

#### LEGUMINOSAE

**Indigofera Benthamiana** Hance in Ann. Sci. Nat. sér. 4, xviii. 219 (1862).

**A n e i t y u m:** Anelgauhat Bay, sea level, rain-forest, seashore, common, no. 785, Feb. 20, 1929 (shrub up to 3 m. high; flowers pink); Anaunoe, alt. 15 m., seashore, common, no. 994 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 15 cm. in diam.; leaves small; flowers small, pink; fruit in pods up to 4 cm. long, 0.4 cm. in diam.). **B a n k s G r o u p:** Vanua Lava, sea level, rain-forest, common, no. 500, July 18, 1928 (small tree up to 6 m. high; flowers purple).—Already collected on Efate; also Malaysia.—Vernacular name “Niniow” (under no. 994).

**Hanslia adherens** Schindler in Fedde, Rep. Nov. Spec. xx. 276 (1924).

**T a n n a:** Lenakel, sea level, heavy rain-forest soil, common, no. 8, Feb. 20, 1928 (shrub 2–3 m. high; leaves dark green; flowers white; the pods of the fruit are a great pest, adhering firmly to the clothing). **E r o m a n g a:** Dillon Bay, sea level, paths and cleared lands in rain-forest, common, no. 251, May 15, 1928 (weed 1 m. high; flowers puce-colored; fruit sticks to clothing). **B a n k s G r o u p:** Vanua Lava, sea level, rain-forest, common, no. 491, July 18, 1928 (shrub about 2 m. high with a troublesome fruit that sticks in the clothes; flowers white).—Already collected on Aneityum, Tanna and Efate, also Solomon and Bismarck Islands, New Guinea, Malaysia.—Vernacular names “Mompoyerrae” (under no. 251) and “Narse” (under no. 491).

**Desmodium umbellatum** De Candolle, Prodr. ii. 325 (1825).

**T a n n a:** Lenakel, sea level, rain-forest soil, common, no. 77, March 3, 1928 (shrub about 3 m. high; flowers white). **A n e i t y u m:** Anelgauhat Bay, alt. 30 m., seaside, common, no. 971<sup>A</sup> (coll.

*J. P. Wilson*), Sept. 1929 (small tree to 15 cm. in diam.; leaves small, oval; flowers small, white; fruit a bean-like pod). **B a n k s G r o u p**: Vanua Lava, sea level, seashore, common, no. 430, July 9, 1928 (shrub common on the beaches of all the islands; flowers white).—Already collected on Aneityum, Eronan, Tanna, Eromanga and Efate; also New Caledonia, Loyalty Islands, Queensland, Fiji, Tonga, Samoa, Society, Caroline, Mariana, Solomon, Bismarck and Admiralty Islands, New Guinea, Malaysia.—Vernacular name “Nalar” (under no. 971<sup>A</sup>).

**Entada scandens** Bentham in Hooker, Jour. Bot. iv. 332 (1842).

**A n e i t y u m**: Anelgauhat Bay; alt. to 240 m., lower ranges, rain-forest, common, no. 966 (coll. *J. P. Wilson*), Sept. 1929 (vine similar to Luchards Bean; leaves medium; flowers yellow; fruit in long box-like pod). **E r o m a n g a**: Dillon Bay, sea level, rain-forest soil, common, no. 336, May 29, 1928 (vine growing on the tops of trees; flowers white to cream colored; fruit a large bean up to 1.5 m. long; seed roasted in native oven, kernel is put in baskets in running water for two weeks and then cooked a second time and eaten by the natives; see note on *Castanospermum australe*).—Already collected on Efate and Mallicolo; also New Caledonia, Queensland, Fiji, Tonga, Samoa, Cook, Mariana, Solomon and Bismarck Islands, New Guinea, Malaysia.—Vernacular name “Nardilinger” (under no. 966) and “Ou-vone-naw” (under no. 336).

**Abrus precatorius** Linnaeus, Syst. Nat. ed. 12, II. 472 (1767).

**E r o m a n g a**: Dillon Bay, sea level, rain-forest, common, no. 254, May 15, 1928 (common creeper on rain-forest brush; flowers purple; seeds made into necklaces and used as beads).—Also New Caledonia, Australia (Queensland, North Australia), Fiji, Tonga, Samoa, Cook, Society, Marquesas, Caroline, Mariana and Bismarck Islands, New Guinea, Malaysia.—Vernacular name “Tarmsee.”

**Strongylodon lucidus** (Forst. f.) Seemann, Fl. Vit. 61 (1865).

**E f a t e**: Undine Bay, alt. 100 m., rain-forest, common, no. 192, April 24, 1928 (vine growing over the tops of trees; flowers pink).—Already found on Efate; also Loyalty, Fiji, Society and Bismarck Islands, New Guinea, Hawaii, Malaysia.

**Pueraria Thunbergiana** (S. & Z.) Bentham in Jour. Linn. Soc. IX. 122 (1867).

**A n e i t y u m**: Anelgauhat Bay, sea level, rain-forest, common, no. 895, March 11, 1929 (vine on rain-forest trees mostly in scrub land which has been semi-cleared; flowers pink).—Also Tonga and ? Solomon Islands, Malaysia.

*Canavalia obtusifolia* De Candolle, Prodr. II. 404 (1825).

*Eromanga*: Dillon Bay, sea level, along seashore, common, no. 304, May 24, 1928 (leguminous vine growing close to the shore; flowers purple; fruit pod when ripe 12 cm. long, 3 cm. in diam.; seeds brown; ripe seed boiled and eaten by the natives). *Aneityum*: Anelgauhat Bay, sea level, seashore, common, no. 780, Feb. 19, 1929 (leguminous vine growing on the sand beaches above high water mark; flowers light blue). Already collected on Tanna, Efate and Aoba; also New Caledonia, Australia (Queensland, N. S. Wales, S. Australia, W. Australia) Fiji, Tonga, Society, Ellice and Bismarck Islands, New Guinea, Malaysia.—Vernacular name “No-sor-rae” (under no. 304).

*Lablab vulgaris* Savi, Diss. 19 (1821).

*Eromanga*: Dillon Bay, alt. 300 m., rain-forest, common, no. 272, May 17, 1928 (bean growing over top of bushes; flowers white; seeds cooked and eaten by natives).—Already collected on Niua; also New Caledonia, Queensland, Fiji, Tonga, Samoa, Cook, Society, Caroline and Mariana Islands, New Guinea, Malaysia.—Vernacular name “Mertanye.”

*Dalbergia monosperma* Dalzell in Hooker's Jour. Bot. & Kew Misc. II. 36 (1850).

*Eromanga*: Dillon Bay, sea level, rain-forest, common, no. 354, June 1, 1928 (vine growing over the tops of rain-forest trees; flowers white).—Also New Caledonia, Fiji Islands, Malaysia.—Vernacular name “Nau-matt-au-matt.”

*Inocarpus edulis* Forster, Char. Gen. 66 (1776).

*Aneityum*: Anelgauhat Bay, sea level, rain-forest, common, no. 778, Feb. 19, 1929 (large tree up to 18 m. high; fruit green, 10 cm. long, 7.5 cm. in diam.; eaten largely by natives for food).—Already found on Eromanga and Efate; also Fiji, Tonga, Wallis, Society, Marquesas and Bismarck Islands, New Guinea, Malaysia.

*Pongamia pinnata* (L.) Merrill, Interpr. Rumph. Herb. Amboin. 271 (1917).

*Pongamia glabra* Ventenat, Jard. Malmaison, I. 28, t. 28 (1803).

*Pongamia mitis* (L.) Merrill in Philip. Jour. Sci. Bot. v. 101 (1910).

*Eromanga*: Dillon Bay, sea level, rain-forest, common, no. 353, June 1, 1928 (large tree up to 20 m. high).—Already found on Eromanga; also New Caledonia, Queensland, North Australia, Bismarck and Caroline Islands, New Guinea, Malaysia.—Vernacular name “Fong-fate-nemett.”

*Sophora tomentosa* Linnaeus, Sp. Pl. 373 (1753).

*Aneityum*: Inyig, alt. 30 m., seashore, common, no. 996,

(coll. *J. P. Wilson*), Sept. 1929 (small tree; leaves small; flowers small, yellow; fruit in long pods). *E f a t e*: Fila Island, Vila, sea level, sea beach, common, no. 182, April 13, 1928 (shrub about 4 m. high; flowers bright yellow).—Already found on Efate; also New Caledonia, Queensland, New South Wales, Fiji, Tonga, Wallis, Cook, Society, Marquesas, Marshall, Mariana, Solomon, Bismarck and Admiralty Islands, New Guinea, Malaysia.—Vernacular name “Incispev” (under no. 996).

*Sophora* sp. nov.

*E r o m a n g a*: Dillon Bay, alt. 300 m., rain-forest, common, no. 376, June 7, 1928 (tree up to 10 m. high; seed black when ripe).

*Castanospermum australe* A. Cunningham & Fraser in Hook. Bot. Misc. I. 241, t. 51 (1830).

*E r o m a n g a*: Dillon Bay, sea level, rain-forest, common, no. 401, June 8, 1928 (tree up to 25 m. high).—Already found on Efate; also New Caledonia, Queensland, New South Wales.—Vernacular name “Oveeliungkill.”

*Caesalpinia nuga* (L.) Aiton, Hort. Kew. ed. 2, III. 32 (1811).

*E r o m a n g a*: Dillon Bay, sea level, rain-forest, common, no. 262, May 15, 1928 (vine growing over the tops of brush; flowers yellow). *B a n k s G r o u p*: Vanua Lava, sea level, rain-forest sea-shore, common, no. 419, July 6, 1928 (vine with sharp, hooked thorns; flowers yellow).—Already found on Eromanga;<sup>1</sup> also New Caledonia, Loyalty Islands, Queensland, Santa Cruz, Caroline, Solomon and Bismarck Islands, New Guinea, Malaysia.—Vernacular name “Warliss warliss.”

*Cassia glauca* Lamarck, Encycl. Méth. I. 647 (1783).

*E r o m a n g a*: Dillon Bay, sea level, rain-forest, common, no. 365, June 4, 1928 (small tree up to 7 m. high). *T a n n a*: Lenakel, alt. 150 m., rain-forest, common, no. 121, March 6, 1928 (shrub 2 m. high, growing in native gardens).—Also Australia?, Fiji Islands, New Guinea, Malaysia.

*Adenanthera pavonina* Linnaeus, Sp. Pl. 384 (1753).

*E r o m a n g a*: Dillon Bay, sea level, rain-forest, common, no. 403, June 8, 1928 (tree up to 15 m. high; fruit with red seeds; wood used to make paddles).—Already found on Efate: also New Caledonia, Loyalty Islands, Queensland, Samoa, Mariana and Solomon Islands, New Guinea, Malaysia.—Vernacular name “Narn dup.”

<sup>1</sup> Omitted from “Liste des plantes connues des Nouvelles Hebrides in Bull. Soc. Bot. France LXXIV. 696 (1927).”



**Mimosa pudica** Linnaeus, Sp. Pl. 518 (1753).

**E r o m a n g a**: Dillon Bay, alt. 200 m., open grass country, common, no. 370, June 5, 1928 (creeping plant growing close to ground; flowers white; leaves are very sensitive, closing up when touched).—Also New Caledonia, Queensland, Fiji, Tonga, Samoa, Cook, Society and Marquesas Islands, Malaysia.—Vernacular name “Nemas une-map.”

**Leucaena Forsteri** Benth in Lond. Jour. Bot. v. 94 (1846).

**A n e i t y u m**: Anelgauhat Bay, alt. 15 m., seashore, common, no. 993 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 38 cm. in diam.; leaves fern-like; flowers small, pink; fruit with bean-shaped pod to 7.5 cm. long); sea level, seashore, common, no. 944, March 19, 1929 (medium sized tree up to 12 m. high; pods about 6 cm. long, 2 cm. in diam.; it is not certain that this tree is indigenous). **B a n k s G r o u p**: Vanua Lava, sea level, rain-forest along seashore, common, no. 438, July 9, 1928 (small tree up to 7 m. high; flowers white).—Also New Caledonia, Loyalty, Fiji, Tonga, Cook and Society Islands.—Vernacular name “Niruman” (under no. 993).

**Leucaena glauca** Benth in Hooker Jour. Bot. iv. 416 (1842).

**E r o m a n g a**: Dillon Bay, sea level, rain-forest, common, no. 252, May 15, 1928 (tree up to 10 m. high, but often smaller; a great pest throughout the whole group).—Also New Caledonia, Fiji, Samoa, Cook, Society, Marquesas, Caroline and Mariana Islands, Malaysia.—Vernacular name “Naemas.”

**Acacia simplicifolia** (L. f.) Druce in Rep. Bot. Exch. Cl. Brit. Isles, 1916, p. 602 (1917).—Macbride in Contr. Gray Herb. LIX, 7 (1919).—Schinz & Guillaumin in Sarasin & Roux, Nova Caled. I. 152 (1920).

**A n e i t y u m**: Anelgauhat Bay, sea level, seashore, common, no. 695, Feb. 4, 1929 (medium sized tree up to 15 m. high with a crooked trunk; leaves dark green, pods light green when gathered). **E r o m a n g a**: Dillon Bay, sea level, on beaches close to sea, common, no. 330, May 29, 1928 (tree up to 12 m. high; common on sea beach).—Already collected on Efate, Tanna and Epi; also New Caledonia, Fiji, Tonga and Samoa Islands.—Vernacular name “Nem-elean-du” (under no. 330).

**Acacia spirorbis** Labillardière, Sert. Austr.-Caled. 69, t. 69 (1824).

**E r o m a n g a**: Dillon Bay, sea level, rain-forest and open country, common, no. 249, May 15, 1928 (spreading wattle up to 12 m. high; flowers yellow; one of the few durable timbers in the New Hebrides). **E r o m a n g a**: Dillon Bay, alt. 300 m., rain-

forest, common, no. 285, May 23, 1928 (a wattle different in type to other types gathered on Eromanga as it has a long straight barrel up to 20 m. high; one of the best wattles for timber purpose, natives use it for bows).—Also New Caledonia, Loyalty Islands.—Vernacular names “Morie” (under no. 249) and “Mouanger” (under no. 285).

*Acacia* sp. affinis *A. spirorbis* Labill.

**A n e i t y u m**: Anelgauhat Bay, alt. 30 m., rain-forest, common, no. 727, Feb. 11, 1929 (small tree up to 9 m. high, growing on poor red soil; leaves silvery green; flowers yellow; bark fissured).

**Serianthes myriadenia** Planchon apud Bentham in Lond. Jour. Bot. III. 225 (1844).

**T a n n a**: Lenakel: on all levels, rich rain-forest soil, common, no. 41, Feb. 22, 1928 (tree up to 20–25 m. high; about 80 cm. in diam., very handsome; flowers pink).—Also Society ! and Tonga ? Islands, but not in the Fiji Islands !

**Serianthes vitiensis** A. Gray, Bot. Wilkes U. S. Exped. I. 485 (1854).

**A n e i t y u m**: Anelgauhat Bay, alt. 60 m., rain-forest, common, no. 743, Feb. 13, 1929 (large tree up to 18 m. high; stamens with pink filaments and yellow anthers). **E r o m a n g a**: Dillon Bay, alt. 300 m., rain-forest, common, no. 312, May 28, 1928 (large tree up to 15 m. high; flower pink; fruit brown when ripe).—Also Fiji Islands.—Vernacular name “Ney-aroney” (under no. 312).

#### ROSACEAE

**Rubus neo-ebudicus** Guillaumin, sp. nov.

Repens, ramis glabris exaculeatis, foliis 3-foliatis, petiolo 2.5–3 cm. longo supra ad basin leviter villosa, stipulis persistentibus usque ad 1.4 cm. longis asymmetricis lanceolatis longe caudatis, foliolis ovatis (usque ad 8 cm.  $\times$  5 cm.) basi rotundatis apice acuminatis margine profunde serratis, dentibus caudatis, nervis 12–16-jugis subtus prominentibus, supra costa subtus costa nervisque exceptis glaberrimis, lateralibus basi leviter asymmetricis, petiolulis supra praecipue basin versus tomentosus, terminali 1.5–2 cm. longo, lateralibus 2–3 mm. longis. Inflorescentia usque ad 4 cm. longa apice tantum florifera, basi foliis 1-foliolatis (3.5 cm.  $\times$  2 cm.) munita, bracteis floriferis integris, stipulis simillimis vel 2–3 furcatis, pedicellis circa 1.5 longis ad apicem sparse hirsutis, floribus albis, sepalis anguste lanceolatis fere 1.5 cm. longis caudatis extra sparse hirsutis, intus basi excepta dense velutinis, petalis late ovatis sepalis fere aequilongis dorso praecipue costa sparse pu-

berulis tenuibus, staminibus petalis brevioribus, carpellis ovatis trigonis, stylo glaberrimo brevioribus.

**Tanna:** Mt. Tokosh Meru, common in rain-forest, 1000 m., no. 150, March 15, 1928 (straggling plant growing on the crest of Mt. Tokosh Meru; flowers white).

Belongs apparently to section IV. *Anoplobatus* Focke.

#### SAXIFRAGACEAE

**Dedea neo-ebudica** Guillaumin, sp. nov.

Arbor parva, tortuosa, ramis nodosis apice dense foliatis resinosisque, foliis erecto-patentibus ovato-lanceolatis (usque ad 13 cm. x 3 cm.) apice rotundatis emarginatisve basi in petiolum 2 cm. longum longe attenuatis dense resinoso-punctulatis coriaceis, racemis axillaribus quam folia longioribus usque ad medium denudatis, floribus albis odoratis, calycis segmentis anguste triangularibus, petalis oblongis obtusis glabris 1.5 cm. longis, staminibus erectis petalis brevioribus, filamentis crassiusculis glaberrimis, antheris oblongis, ovario glaberrimo, stylis crassis columnam staminibus subaequilongam formantibus.

**Aneityum:** Anelgauhat Bay, Saddle Rock, alt. 800 m., rain-forest, no. 866, March 5, 1929 (small twisted tree growing right on top of a high mountain; flowers white, sweetly scented).

Near *D. oreophila* Schltr. and *D. parviflora* Schltr. on account of its bisexual flowers, but quite distinct in its racemes much exceeding the leaves and naked from the base to about the middle.

**Weinmannia Denhamii** Seemann, Fl. Vit. 109 (1865) ?

**Efate:** Undine Bay, alt. 500 m., rain-forest, common, no. 236, April 28, 1928 (small tree up to 10 m. high; seed vessels brown).

Differs from Seemann's description based on a plant from Aneityum solely in the sessile terminal leaflets with the petiole not winged.

**Weinmannia Kajewskii** Guillaumin, sp. nov.

Arbor parva, ultra 8 m. alta, ramis gracilibus sparse pilosis, stipulis ovatis, foliis sub-erectis imparipinnatis 4-5-jugis usque ad 11 cm. longis, petiolo 1.5-2 cm. longo semiterete et apicem versus brevissime marginato supra breviter puberulo, rachi inter foliolorum jugas alata infra semiterete supra plana medio costata breviterque puberula, foliolis coriaceis glaberrimis infra nigro-punctulatis lanceolatis apice acutis margine serratis etiam terminali sessilibus, lateralibus 2.5-3 cm. longis 0.5-0.8 cm. latis basi inaequaliter cuneatis uno latere acute cuneato altero rotundato, terminali 2-4 cm. longo 0.4-0.8 cm. lato basi longe attenuato; racemi ad apicem ramulorum

axillares, singuli vel 2-nis, 8-9 cm. longi, sparse pilosi, pedicellis 2 mm. longis sparse pilosis, capsula glabra 4 mm. longa.

**E r o m a n g a:** Dillon Bay, alt. 400 m., rain-forest, common, no. 317, May 25, 1928 (small tree up to 8 m. high; common on altitudes on Tanna, Eromanga and Efate).—Vernacular name "Nari-yup."

**Weinmannia Macgillivrayi** Seemann, Fl. Vit. 109 (1865).

**A n e i t y u m:** Anelgauhat Bay, alt. 30 m., rain-forest, common, no. 735, Feb. 11, 1929 (large tree up to 18 m. high; spikes of cream-colored flowers).—Already collected on the island.

**Weinmannia tannaensis**, Guillaumin, sp. nov.

Arbor ultra 15 m. alta, ramis gracilibus primum breviter puberulis mox glabris, stipulis ovatis margine ciliolatis mox glabris, foliis sub-erectis imparipinnatis 4-6-jugis, petiolo 0.5-0.7 cm. longo semiterete et apicem versus brevissime marginato primum sparse piloso cito glabro, rachi inter foliolorum jugas apicem versus breviter alata infra semiterete supra plana medioque costata primum sparse pilosa cito glabro, foliolis coriaceis ovatis rarius ovato-lanceolatis glaberrimis margine serratis infra punctulatis etiam terminali sessilibus, lateralibus 1-1.5 cm. longis 0.4-0.8 cm. latis apice obtusis rarius acutis basi inaequaliter obtusis uno latere acuto altero rotundato, terminali 1.5-2 cm. longo 0.4-0.8 cm. lato apice acuto basi longe attenuato; racemi ad apicem ramulorum axillares, vulgo singuli, circa 5 cm. longi, puberuli, pedicellis 1.5-2 mm. longis puberulis, bracteis lanceolatis aequilongis, floribus albis 1 mm. longis, calyce alte 4-partito, segmentis triangularibus vix 1 mm. longis, petalis 4 ovatis aequilongis, staminibus 8 erectis inaequalibus petalis leviter longioribus, filamentis subulatis glabris, antheris ovatis apiculatis, glandulis cylindricis filamentis antherarum breviorum dimidio brevioribus, ovario ovoideo glabro, staminibus longioribus subaequilongo, stylis 2 ovario leviter brevioribus.

**T a n n a:** Mt. Tokosh Meru, alt. 1000 m., rain-forest, common, no. 151, March 15, 1928 (tree up to 15 m. high, right on crest of Mt. Tokush Meru; flowers white).

Near *W. Kajewskii* but the petiole two to three times shorter and the lateral leaflets much shorter and very generally obtuse.

**Geissois Denhamii** Seemann, Fl. Vit. 109 (1865).

**A n e i t y u m:** Anelgauhat Bay, alt. 60 m., rain-forest, common, no. 741, Feb. 12, 1929 (large tree up to 18 m. high; spikes of scarlet flowers; fruit yellow when ripe). **T a n n a:** Lenakel, alt. 200 m., rain-forest, common, no. 106, March 6, 1928 (tree about 20 m. high, 70 cm. in diam.). **E f a t e:** Undine Bay, alt. 300 m., rain-forest, common, no. 225, April 27, 1928 (tree about 10 m. high; flower a

bright scarlet, very pretty, growing out of branches).—Already found on Aneityum.<sup>1</sup>

#### RHIZOPHORACEAE

*Rhizophora conjugata* Linnaeus, Sp. Pl. 443 (1753).

**B a n k s G r o u p:** Vanua Lava, sea level, seashore, common, no. 499, July 18, 1928 (common mangrove throughout the New Hebrides).—Also Caroline Islands, Malaysia; a special variety in New Caledonia.

*Rhizophora mucronata* Lam. var. *stylosa* (Griff.) Schimper in Bot. Mitteil. Trop. Jena, III. 92 (1891).—Det. by F. M. Salvoza.

**E f a t e:** Fila Island, Vila, sea level, sea beach, common, no. 183, April 13, 1928 (tree with many stilt roots).—Already recorded from the New Hebrides; also Australia (Queensland, North Australia), New Caledonia, Fiji, Tonga, Samoa, Ellice, Caroline, Mariana, Bismarck and Admiralty Islands, New Guinea, Malaysia.

*Bruguiera eriopetala* Wight & Arnott in Ann. Nat. Hist. I. 368 (1838).

**A n e i t y u m:** Anelgauhat Bay, sea level, seashore, common, no. 782, Feb. 19, 1929 (common mangrove up to 12 m. high). **E r o m a n k a:** Dillon Bay, sea level, on salt water creek, common, no. 239, May 29, 1928 (tree up to 15 m. high, leaning over salt water). **B a n k s G r o u p:** Vanua Lava, sea level, seashore, common, no. 478, July 12, 1928 (mangrove growing on sea beaches).—Also New Caledonia, Queensland, Tonga, Wallis, Samoa, Marshall, Caroline, Mariana, Solomon and Admiralty Islands, New Guinea, Malaysia.—Vernacular name "Net-ungou" (under no. 329).

*Crossostylis banksiana* Guillaumin, sp. nov.

Arbor 15 m. alta, ramis gracilibus glabris, stipulis truncatis 1 mm. longis, foliis vix coriaceis ovatis (usque ad 16 cm. x 7 cm.) glabris apice obtusis basi cuneatis, nervis 6-7-jugis, petiolo 1.5-2.5 cm. longo; floribus 1-2, 8 mm. latis, pedicello gracili 8 mm. longo, sepalis 5 triangularibus 3 mm. longis extra glabris intus breviter puberulis, petalis 5 albis cito deciduis spathulato-truncatis marginibus apicem versus inflexis dorso carinatis extra breviter puberulis intus apicem versus lanuginosis, sepalis aequilongis, staminibus circa 20 disco cupuliformi insertis, ovario 8-loculare, stigmatibus totidem.

**B a n k s G r o u p:** Vanua Lava, alt. 700 m., rain-forest, common, no. 459, July 10, 1928 (tree up to 15 m. high; petals white).

<sup>1</sup> Omitted from "Liste des plantes connues des Nouvelles Hebrides" in Bull. Soc. Bot. France, LXXIV. 697 (1927).

Related chiefly to *C. Cominsii* Hemsl. from the Santa Cruz Islands which, however, has 30 stamens, 10 carpels and glabrous petals; in the number of carpels it approaches *C. Harveyi* Benth. from the Fiji Islands, but that species has different leaves.

#### COMBRETACEAE

**Terminalia Catappa** Linnaeus, Mant. II. 519 (1771).

**E r o m a n g a**: Dillon Bay, sea level, rain-forest soil, common, no. 244A, May 14, 1928 (tall tree with spreading branches and prominent buttresses; leaves turn brownish red when they fall; flowers white; fruit red to black when ripe, eaten by the natives). Already collected on Tanna; also New Caledonia, Queensland, Fiji, Tonga, Samoa, Marshall, Caroline, Mariana, Solomon and Admiralty Islands, New Guinea, Malaysia.—Vernacular name "Dayle."

**Lumnitzera littorea** (Jack) Voigt, Hort. Suburb. Calcutt. 39 (1845).

*Lumnitzera purpurea* Presl, Rep. Bot. I. 155 (1834).

*Lumnitzera coccinea* Wight & Arnott, Prod. II. 316 (1834).

**B a n k s G r o u p**: Vanua Lava, sea level, rain-forest, common, no. 427, July 6, 1928 (mangrove growing along salt water creeks and foreshores; flowers red, very pretty).—Also New Caledonia, Queensland, Fiji, Tonga, Samoa, Ellice, Caroline, Mariana and Solomon Islands, New Guinea, Malaysia.

#### MYRTACEAE

**Metrosideros villosa** Smith in Trans. Linn. Soc. III. 268 (1797).

**A n e i t y u m**: Anelgauhat Bay, alt. to 600 m., rain-forest, common, no. 982 (coll. *J. P. Wilson*), Sept. 1929 (large tree to 1 m. in diam.; leaves small; flowers yellow; fruit brown, 0.75 cm. in diam.). **T a n n a**: Mt. Tokosh Meru, alt. 900 m., rain-forest, common, no. 157, March 15, 1928 (tree up to 10 m. high; flower scarlet).—Also Fiji, Society, Marquesas and Gambier Islands, Lord Howe Island, Kermadec Islands (apparently incorrectly reported from New Caledonia by Jeanneney in his "Nouvelle Calédonie Agricole, p. 85").—Vernacular name "Nevug" (under no. 982).

**Metrosideros villosa** var. **glaberrima** Guillaumin, comb. nov.

*Metrosideros collina* var. *glaberrima* Bertero apud Guillemain in Ann. Sci. Nat. sér. 2. VII. 351 (Zephyr. Tait. 57) (1837).

**E r o m a n g a**: Dillon Bay, alt. 300 m. poor red soil country (bracken), common, no. 294, May 24, 1928 (tree up to 10 m. high but in rain-forest up to 30 m. high; a very remarkable growth; flowers red and yellow; one of the prettiest trees in the islands).—Also Society Islands.—Vernacular name "Nem-er-an."

***Myrtus aneityensis*** Guillaumin, sp. nov.

Arbor parva, 10 m. alta, ramis teretibus brunneo-rubris, foliis vivo atro-viridibus lucidis ovatis vel ovato-lanceolatis (3-7 cm. x 2-3 cm.) apice attenuatis basi cuneatis obtusisve chartaceis minutissime pellucide punctulatis, petiolo brevi (2-4 mm. longo); floribus ad apicem axillaribus singulis vel 3-5-nis cymosis, pedunculis pedicellisve capillaribus 0.5-2 cm. longis apice minute 2-bracteolatis, bracteolis linearibus 0.5 mm. longis, calycis segmentis 4 ovatis 2 mm. longis, petalis 4, albis ovatis sepalis 2-plo longioribus apice minute ciliolatis, staminibus valde numerosis, stylo subulato petalis sub-aequilongis basin versus minute argenteo-puberulo, ovario 2-loculari. Fructus brunnei, 6 mm. longi.

**A n e i t y u m:** Anelgauhat Bay, alt. 120 m., rain-forest, common, no. 810, Feb. 23, 1929 (small tree up to 9 m. high; leaves dark glossy green; petals white); alt. to 150 m., lower hills in rain-forest, common, no. 985 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 30 cm. in diam.; leaves small; flowers small, white; fruit small, about 0.5 cm. long, brown).—Vernacular name "Nivic."

The genus *Myrtus* abundant in New Caledonia and on the east coast of Australia seems to be absent from New Guinea and Polynesia.

***Decaspermum neo-ebudicum*** Guillaumin, sp. nov.

Arbor circa 10 m. alta, ramis primum argenteo-sericeis deinde glabris, foliis lanceolatis (usque ad 5 cm. x 1.5 cm.) rigidis apice longe acutis basi cuneatis vivo atro-viridibus sicco brunneis concoloribusque subtus abunde punctulatis, nervis inconspicuis primum costa marginibusque argenteo-sericeis mox glabris, petiolo brevi (2-4 mm. longo); floribus axillaribus solitaribus vel cymose 3-nis, pedunculo foliis brevioribus, bracteis foliaceis lineari-lanceolatis 4 mm. longis, bracteolis bracteis simillimis ad calycis basin singulis, cymarum flore centrali lateralibus brevius pedicellato et ebracteolato, calycis receptaculo extra dense argenteo-sericeo, dentibus 5 aequilongis margine argenteo-ciliolatis deinde glabrescentibus, petalis albis basi roseis ovatis calycis lobis 4-plo longioribus, staminum filamentis roseis, antheris subflavis, ovario 8-loculari, fructibus brunneis fere glabris globosis 4 mm. diam.

**A n e i t y u m:** Anelgauhat Bay, sea level, poor red soil country, common, no. 699, Feb. 4, 1929 (small tree up to 7 m. high; leaves dark glossy green; petals white with pink bases; stamens pink with cream colored anthers). **E f a t e:** Undine Bay, alt. 100 m., rain-forest, common, no. 212, April 26, 1928 (tree about 10 m. high; fruit brown when ripe).

In its general aspect this new species resembles *D. vitiense* Guil-

laumin, comb. nov. (*Nelitris vitiensis* A. Gray), known from the Wallis and Fiji Islands and from Aneityum, but that species has a paniculate inflorescence and a 5-celled ovary. In its 8-celled ovary *D. neo-ebudicum* approaches *D. humifusum* Diels, *D. nitidum* Lauterb. and *D. prunoides* Diels from New Guinea and *D. Raymondii* Diels from the Caroline Islands.

To this must probably also be referred the following specimen though it has much longer (up to 8 cm. x 2 cm.) and thinner leaves rounded at the base: **E r o m a n g a**: Dillon Bay, alt. 300 m., rain-forest, common, no. 283, May 23, 1928 (small tree up to 10 m. high; used by natives for enlarged spleen; used by macerating with cold water and white sedge).—Vernacular name “Nywass” (under no. 283).

**Eugenia rariflora** Benth in Lond. Jour. Bot. II. 221 (1843).

**A n e i t y u m**: Aname, sea level, alt. 15 m., no. 990 (coll. *J. P. Wilson*) Sept. 1929 (small tree to 22.5 cm. in diam.; leaves small, round; flowers white, small; fruit a red berry, 1.4 cm. in diam.).—Also Gambier, Society, Samoa, Tonga and Fiji Islands.—Vernacular name “Nupoin hudaig.”

**Eugenia** sp.

**T a n n a**: Lenakel, alt. 150 m., rich rain-forest soil, common, no. 53, Feb. 24, 1928 (tree about 15 m. high; 40 cm. in diam.; fruit pink and growing out of trunk of tree).

**Eugenia** (§ *Jambosa*) **javanica** Lamarck, Encycl. Méth. III. 200 (1823).

**A n e i t y u m**: Umage, alt. 450 m., rain-forest, common, no. 998 (coll. *J. P. Wilson*), Sept. 1929 (large tree to 1.30 m. in diam.; leaves medium; flower white tinged with pink; fruit black, 3 cm. long, 4 cm. in diam.).—Also New Guinea, Bismarck, Samoa and Caroline Islands, Malaysia.—Vernacular name “Indahau.”

The specimen quite resembles in its rather long-petioled leaves neither rounded nor subcordate at the base some forms considered by Diels as a subspecies *timorensis*.

**Eugenia** (§ *Jambosa*) **Richii** A. Gray, Bot. Wilkes U. S. Explor. Exped. I. 510 (1854), var. vel spec. distincta?

**A n e i t y u m**: Utgi, alt. to 150 m., seashore, common, no. 1003 (coll. *J. P. Wilson*) Sept. 1929 (large tree to 1 m. in diam.; leaves large, dark green; flowers crimson, in clusters; fruit red, 7.5 cm. long, 4 cm. in diam.; fruit eaten). **T a n n a**: Lenakel, alt. 100 m., rain-forest soil, common, no. 36, Feb. 21, 1928 (tree 10–12 m. high, 40–50 cm. in diam.; flower very pretty, puce-colored). **E r o m a n**



**g a:** Dillon Bay, alt. sea level, rain-forest, common, no. 255, May 15, 1928 (splendid tree up to 25 m. high; bark brown; fruit pink when ripe, eaten largely by natives). **B a n k s G r o u p:** Vanua Lava, sea level, rain-forest, common, no. 472, July 12, 1928 (large tree up to 20 m. high; flower red; common throughout the group).—Vernacular names "Inyheug" (under no. 1003) and "Wer-veh" (under no. 255).

The specimens differ from the quite polymorphous plant of the Fiji and Tonga Islands in the tips of the branches being flattened, not quadrangular with prominent lines, though certain parts of the older branches are distinctly quadrangular, in the generally obtuse leaves, but at the base sometimes rounded and slightly cordate, in the glands even pellucid on old leaves, and in the tube of the calyx not exceeding 1 cm. in length.

**Eugenia** (§ *Jambosa*) sp.

**Eromanga:** centre of the island from Dillon Bay, no. 340, June 1, 1928 (large tree up to 25 m. high; fruit red, 2.5 cm. long, 2 cm. in diam.).—Vernacular name "Nah-rom-ye-in."

**Eugenia** (§ *Jambosa*) sp.

**A n e i t y u m:** Anelgauhat Bay, alt. 150–450 m., rain-forest, common, no. 952 (coll. *J. P. Wilson*), Sept. 1929 (high tree up to 18 m. high, 0.60 m. in diam.; leaves medium, glossy; flowers small, yellow; fruit round, 2.5 cm. in diam., dark brown).—Vernacular name "Nomogheo."

**Syzygium aneityense** Guillaumin, sp. nov.

Arbor magna, ad 15 m. alta, foliis ovato-lanceolatis (usque ad 9 cm. x 3 cm.) longe (1–1.5 cm.) et oblique acuminatis basi cuneatis rigide membranaceis, nervis 9–11-jugis, in foliis junioribus bene, in adultioribus parum distinctis, petiolo gracili circa 5 mm. longo, inflorescentiis terminalibus circa 6 cm. longis laxis paucifloris, bracteis deciduis, pedicellis apice bracteolis minutissimis cito caducis instructis, floribus purpureis, receptaculo (tantum juniore) late obconico circa 1 cm. longo, lobis 4 brevissimis vix distinctis.

**A n e i t y u m:** Anelgauhat Bay, alt. 335 m., rain-forest, common, no. 846, March 2, 1929 (large tree up to 12 m. high; flower buds only, and these purple in color).

On account of the lateral veins being more or less distinct from the intermediate ones and on account of the terminal inflorescences this species seems to take its place near *S. orthoneurum* and *S. modestum* Diels.

**Syzygium Kajewskii** Guillaumin, sp. nov.

Arbor alta, trunco ultra 60 cm. diam., foliis ovatis (usque ad

10 cm. x 5 cm.) apice breve et oblique acuminatis basi cuneatis chartaceis, nervis crebris tenuissimis, petiolo 1–1.5 cm. longo, inflorescentiis terminalibus usque ad 7 cm. longis paniculatis, bracteis deciduis, floribus parvis albis, receptaculo circa 1 cm. longo basi longissime attenuato et a pedicello capillari bractearum delapsorum cicatricibus tantum distincto, lobis 4 rotundatis vix 1 mm. longis, petalis plus minusve calyptratim deciduis vix 2 mm. longis, staminibus 7–8 mm. longis, fructibus baccatis 0.5 cm. diam. nigris.

**A n e i t y u m:** Anelgauhat Bay, alt. 657 m., rain-forest, common, no. 970 (coll. *J. P. Wilson*), Sept. 1929 (large tree, trunk up to 0.60 m. in diam.; leaves medium; flowers small, white; fruit a berry, 0.7 cm. in diam., black when ripe).—Vernacular name “Nomo Thee.”

Very remarkable on account of the elongated and slender receptacle which passes directly into the pedicel if there is one.

***Syzygium neepau* Guillaumin, sp. nov.**

Arbor alta, trunco 1 m. diam., foliis fere discoideis (usque ad 12 cm. x 8 cm.) chartaceis apice rotundatis vel leviter retusis basi subito cuneatis, nervis crebris tenuibus a venis levissime distinctis, petiolo 1 cm. longo, inflorescentiis usque ad 20 cm. longis sat laxè paniculatis, ramis indistincte triangulis, bracteis deciduis, floribus albis, receptaculo obconico 5 mm. longo, lobis semi-circularibus vix 1 mm. longis, petalis calyptratim deciduis 2 mm. longis, staminibus 7 mm. longis, fructibus globosis 12 mm. diam.

**A n e i t y u m:** Anelgauhat Bay, alt. 500 m., rain-forest, common, no. 973 (coll. *J. P. Wilson*), Sept. 1929 (large tree, trunk up to 1 m. in diam.; leaves green, nearly circular; flowers small, white; fruit black, round, about 1.4. cm. in diam.).—Vernacular name “Neepau.”

Nearest to *S. clusiaefolium* A. Gray, but the leaves are less cuneate at the base, the inflorescence slenderer and the flowers smaller.

***Syzygium nidie* Guillaumin, sp. nov.**

Arbor alta, trunco ultra 1.20 m. diam., glaberrima, foliis obovatis vel obovato-ellipticis (usque ad 7 cm. x 3 cm.) apice subito longeque (6 mm.) acuminatis basi cuneatis, punctis pellucidis minimis, nervis tenuibus crebris parallelis, petiolo ad 1.5 cm. longo; inflorescentia 5–7 cm. longa, terminalis, floribus albis trichotome paniculatim cymosis, pedicello 3–8 mm. longo apice articulato et vix infra apicem bracteolata (bracteolis deciduis non visis), receptaculo infero superum infundibuliformem aequante, tubo turbinato circa 1 cm. longo medio 5 mm. diam., segmentis 4 triangularibus 1.5 mm. longis,

petalis calyptratim deciduis, exteriore tantum libero, staminibus 1.5 cm. longis, stylo 1.8 cm. longo.

**A n e i t y u m**: Anelgauhat Bay, alt. 500 m., rain-forest, common, no. 984 (coll. *J. P. Wilson*), Sept. 1929 (large tree to 1.30 m. in diam.; leaves medium; flowers white; fruit red, 1.2 cm. long, 0.5 cm. in diam.; wood used for building).—Vernacular name “Nidie.”

Rather close to *S. corynocarpum* Diels from the Fiji, Samoa and Tonga Islands, but the flowers are much larger, and particularly to *S. heloanthum* Diels from New Guinea, but this has the tubular part of the receptacle much longer than the funnelform part.

**Syzygium nomoa** Guillaumin, sp. nov.

Arbor ad 20 m. alta, trunco ad 1.20 m. diam., foliis ovatis (usque ad 16 cm. x 6 cm.) sat coriaceis apice rotundatis basi cuneatim attenuatis, nervis crebris tenuibus parallelis, petiolo 1–1.5 cm. longo; inflorescentiis terminalibus ad 10 cm. longis corymboso-paniculatis, bracteis persistentibus minutis sed bene distinctis instructis, floribus sub-flavis, receptaculo obconico 5 mm. longo, lobis parum distinctis, ore tantum undulato, petalis plus minusve calyptratim cuneatis 3 mm. longis, staminibus 1 cm. longis, fructibus ovatis (10–12 mm. x 6–8 mm.) nigris.

**A n e i t y u m**: Anelgauhat Bay, alt. 180–325 m., rain-forest, common, no. 948 (coll. *J. P. Wilson*), Sept. 1929 (grows to large tree up to 1.30 m. in diam.; leaves thick, glossy; flowers cream-colored, tufted). **T a n n a**: Lenakel, alt. 200 m., rain-forest, common, no. 128, March 7, 1928 (tree about 20 m. high, 70 cm. in diam.; fruit black when ripe).—Vernacular name “Nomoa” (under no. 948).

Resembles in certain characters *S. dictyoneurum* Diels from New Guinea, but is quite distinct in the shape of the leaves and in the nearly indistinct lobes of the calyx.

**Syzygium** sp. affine *S. scytophyllum* Diels.

**A n e i t y u m**: Anelgauhat Bay, alt. 800 m., rain-forest, common, no. 839, Feb. 3, 1929 (large tree up to 12 m. high; fruit black when ripe, 3 cm. long, 0.5 cm. in diam. at base).

**Syzygium?**

**E f a t e**: Undine Bay, sea level, rain-forest, common, no. 197, April 24, 1928 (tree up to 15 m. high; fruit cream-color when ripe).

LECYTHIDACEAE

**Barringtonia excelsa** Blume, Bijdr. Fl. Ned. Ind. 1097 (1825).

**E r o m a n g a**: Dillon Bay, sea level, rain-forest, common, no. 247, May 15, 1928 (tree up to 20 m. high, with many branches; fruit 6 cm. long, 4.5 cm. in diam., skin green, nuts greatly prized

and eaten by natives). **Tanna**: Lenakel, alt. 100 m., rain-forest soil, common, no. 35, Feb. 21, 1928 (tree 12–15 m. high, 30 cm. in diam.; it is a decidedly handsome tree, the leaves being of a bright green, and it gives a good shade; the fruits hang down in racemes having up to 8 fruits on a single raceme, so the trees are thus capable of bearing heavy crops; the fruit is about 7 cm. long, and about 3.5 cm. in diam. and slightly oval; when ripe it is a light green mottled with dark green irregular lines or dots; diameter of the husk about 1 cm.; the kernel is 3.5 cm. long, about 1.75 cm. in diam., has a brown skin and no outside covering except the husk mentioned; it is very pleasant to eat; there is a variety of this species which has exactly the same leaves and the fruit is of the same dimensions and shape, only the outside husk of the fruit is blue; the flavor of the two is identical).—Already found on Tanna and Efate; also Malaysia.—Vernacular names “Velingeh” (under no. 247) and “Nevingen” (under no. 35).

**Barringtonia racemosa** (L.) Roxburgh, Hort. Beng. 52 (1814), nomen nudum; Fl. Ind. 634 (1832).

**Aneityum**: Anelgauhat Bay, sea level, rain-forest, common, no. 777, Feb. 19, 1929 (tree up to 12 m. high; found growing only in swamps; leaves dark glossy green; fruit 9 cm. long, 5 cm. in diameter; the fruit of this species growing in swamps, not eaten; the fruit of another species is readily eaten). **Tanna**: Lenakel, alt. 200 m., rain-forest, common, no. 126, March 7, 1928 (tree similar to the Nevingen except the leaves are purple instead of green; fruit dark purple 9 cm. long, 5.5 cm. in diam., larger than the green Nevingen; the fruit of this tree instead of having a good edible nut, is poisonous).—Already found on Tanna; also New Caledonia, Queensland, Fiji, Samoa, Caroline, Mariana, Bismarck and Admiralty Islands, New Guinea, Malaysia.—Vernacular name “Nevingen (black)” (under no. 126).

#### MELASTOMACEAE

**Melastoma denticulatum** Labillardière, Sert. Austr.-Caled. i. 65, t. 64 (1824).

**Aneityum**: Anelgauhat Bay, alt. up to 90 m., lower ranges, common, no. 972 (coll. *J. P. Wilson*), Sept. 1929 (small tree about 20 cm. in diam.; leaves elongated, yellow-veined; flowers white; fruit brown, 1.4 cm. in diam.); sea level, poor red soil, common, no. 736, Feb. 11, 1929 (shrub up to 2 m. high; petals white, tinged with cream). **Efate**: Undine Bay, alt. 400 m., rain-forest, common, no. 223, April 27, 1928 (small shrub up to 2 m. high; flowers whitish pink).—Already found on Aneityum and Tanna; also New Cale-

donia, Fiji, Tonga, Samoa, Cook, and Society Islands.—Vernacular name “Aditi” (under no. 972).

**Medinilla neo-ebudica** Guillaumin, sp. nov.

Epiphytica, glaberrima, ramis crassis dense verrucoso-lenticellatis, foliis 3-nis carnosis, junioribus intense rubris, ovato-lanceolatis (usque ad 12 cm. x 5 cm.) 3-plinerviis apice acutis basi obtusis vel subrotundatis, petiolo 2–2.5 cm. longo; floribus rubris in axillis foliorum presentium vel delapsorum fasciculatis minimis pedicello 5–8 mm. longo subbrevioribus, calyce obconico apice truncate et brevissime 4-undulato 4 mm. longo, petalis 4 late ovatis 2.5 mm. longis, staminibus 8, antheris basi vix productis; fructibus rubris 5 mm. diam., pedunculo usque ad 2 cm. longo.

**A n e i t y u m**: Anelgauhat Bay, alt. 700 m., rain-forest, common, no. 978 (coll. *J. P. Wilson*) Aug. 1929 (parasite, grows on other trees; leaves elongated; flowers very small, red; fruit small, 0.5 cm. in diam., red). **B a n k s G r o u p**: Vanua Lava, alt. 600 m., rain-forest, common, no. 486, July 17, 1928 (parasite plant of the higher altitudes; fruit red).

Seems particularly near *M. musofo* Lauterb. & Schum. from New Guinea, but the leaves are more acute at the base and the flowers in denser fascicles.

**Medinilla heteromorphophylla** Guillaumin, sp. nov.

Scandens, ramis teretibus gracilibus primum dense rubiginoso-furfuraceis, cortice non verrucoso, nodis ebarbatis, foliis oppositis saepius heteromorphis, lamina una ovata (9–11 cm. x 4 cm.) apice acuminata basi rotundata 7-plinervia petiolo circa 1.5 cm. longo suffulta, altera cordata (3–4.5 cm. x 2–3.5 cm.) 5–7-plinervia sessili vel subsessili, omnibus primum rubiginose furfuraceis mox glaberrimis; inflorescentia axillaris, 4–5 cm. longa, primum rubiginose furfuracea, deinde glabrescens, umbellata, pedunculo basin versus minute 2-bracteolato, ramis bracteis ovatis vel elliptico-ovatis (8 mm. x 4–5 mm.) petaloideis roseis involucratis, umbellulis, si adsunt, similibus, bracteis floralibus late ovatis (1.5 cm. x 1.3 cm.), floribus roseis, tantum junioribus 1 cm. longis, sessilibus, calyce basi tantum stellato-piloso, apice truncato et 4-tuberculato, petalis 4, staminibus 8.

**B a n k s G r o u p**: Vanua Lava, alt. 500 m., rain-forest, common, no. 481, July 16, 1928 (shrub climbing up trees and hanging down in long stems; flowers pink, very pretty).

Seems rather close to *M. rhodochlaena* A. Gray from the Fiji Islands, but the leaves and particularly the inflorescences are very different.

***Astronia aneityensis* Guillaumin, sp. nov.**

Arbor parva, 15 m. alta, glaberrima, trunco 20 cm. diam., ramis teretibus, foliis ovatis (10–13 cm. x 4–5 cm.) apice acute acuminatis basi cuneatis triplinervis, petiolo 3–5 cm. longo brunneo; inflorescentia circa 10 cm. longa, corymboso-paniculata, bracteis omnibus foliaceis apicem versus minoribus (1 cm. x 0.4 cm.), floribus rubris 1 cm. longis pedicello aequilongo suffultis, calyce in alabastro juniore calyptratim secedente deinde fere regulariter 4–6-lobato, petalis 6, ovario 4-loculari; fructibus brunneis globoso-depressis 1 cm. longis, calyce cylindrico fere aequilongo et margine 4-lobato superatis.

**A n e i t y u m:** Anelgauhat Bay, alt. 35–175 m., rain-forest, common, no. 957 (coll. *J. P. Wilson*), Sept. 1929 (small tree up to 20 cm. in diam.; leaves long, with three long veins; flowers small, red; fruit a small berry); alt. 450 m., rain-forest, common, no. 880, March 5, 1929 (small tree up to 12 m. high; petioles of leaves brown; fruit brown when ripe, 1 cm. long, 0.75 cm. in diameter).—Vernacular name “Natge” (under no. 957).

It does not resemble any other species of the section *Naudinia*.

***Astronia banksiana* Guillaumin, sp. nov.**

Arbor parva, ramis crassis teretibus dense rubiginoso-furfuraceis, foliis ovato-lanceolatis (circa 20 cm. x 6 cm.) apice longe (20 cm.) et graciliter falcato-acuminatis basi cuneatis supra glabris infra in nervis rubiginoso-furfuraceis, lamina lepidota vivaque brunnea, petiolo 3.5–4.5 cm. longo furfuraceo-rubiginoso; inflorescentia circa 9 cm. longa, corymboso-paniculata, dense rubiginoso-furfuracea, bracteis inferioribus foliis similibus (usque ad 6 cm. x 2 cm.) 1 cm. petiolatis, superioribus linearibus 3 mm. longis dense furfuraceis, bracteolis bracteis superioribus similibus sed minoribus, floribus (tantum junioribus) sessilibus obovatis, calyce dense furfuraceo apice breviter 6-dentato, dentibus triangularibus, ovario 6-loculari.

**B a n k s G r o u p:** Vanua Lava, on high mountains, alt. 200 m., rain-forest, common, no. 473, July 12, 1928 (small tree growing on a high mountain; leaves brown underneath).

Seems rather near *A. tomentosa* Seem. from the Fiji Islands but the leaves are very different with a long slender and falcate acumen and cuneate at the base.

## LYTHRACEAE

***Pemphis acidula* Forster, Char. Gen. 68, t. 34 (1776).**

**A n e i t y u m:** Anelgauhat Bay, sea level, seashore, common, no. 779, Feb. 19, 1929 (plant up to 1.30 m. high, growing on beaches; petals white). **E f a t e:** Fila Island, Vila, sea level, seashore, com-

mon, no. 189, April 14, 1928 (small shrub about 2 m. high growing on rocks). **B a n k s G r o u p**: Vanua Lava, sea level, seashore, common, no. 429, July 9, 1928 (small plant growing on rocky shores).

Already found on Efate; also New Caledonia, Loyalty Islands, Australia (Queensland, North Australia), Tonga, Society, Paumotu, Union, Ellice, Gilbert, Marshall, Mariana, Solomon and Bismarck Islands, New Guinea, Malaysia.

#### SONNERATIACEAE

**Sonneratia acida** Linnaeus f. Suppl. 252 (1781).

**B a n k s G r o u p**: Vanua Lava, sea level, seashore, common, no. 442, July 9, 1928 (common mangrove up to 10 m. high; flowers red).—Also Solomon Islands, Malaysia.

#### SAMYDACEAE

**Homalium aneityense** Guillaumin, sp. nov.

Arbor parva, 10 m. alta, foliis rigide membranaceis sub-discoidis (usque ad 8 cm. x 6.5 cm.) utrinque rotundatis, nervis 5–6-jugis infra in costa papillois, petiolo sat gracili 1–1.5 cm. longo sparse papilloso; inflorescentia terminalis, ramoso-spicata, 16 cm. longa, dense flavo-fulvo-pilosa, floribus sub-sessilibus 6 mm. longis, calycis tubo 3 mm. longo dense piloso, segmentis 6 spathulatis (6 mm. x 1 mm.) extra dense pilosis intus sparsius lanuginosis margine dense lanuginosis, petalis 6 leviter longioribus similibus, glandulis oppositisepalis magnis glabris nigris, staminibus 3–5-nis fasciculatis alternantibus, filamentis basi sparse lanuginosis, disco lanuginoso, stylis 4–5 basi coalitis apice glabris basi lanuginosis.

**A n e i t y u m**: Anelgauhat Bay, alt. 200 m., rain-forest, common, no. 914, March 17, 1929 (small tree up to 9 m. high; flowers flannel-colored [tawny?]).

#### PASSIFLORACEAE

**Passiflora aurantia** Forster f., Fl. Ins. Austr. Prodr. 62 (1786).

**E r o m a n g a**: Dillon Bay, alt. 300 m., rain-forest, common, no. 270, May 17, 1928 (vine growing over the tops of brush; flowers cream-colored, with orange underneath petals).

Also New Caledonia, Loyalty Islands, Queensland, Norfolk Island, Samoa Islands, New Guinea.—Vernacular name “Ou-vli-nockie.”

#### ARALIACEAE

**Delarbrea collina** Vieillard in Bull. Soc. Linn. Norm. ix. 342 (1865).

**E r o m a n g a**: Dillon Bay, sea level, rain-forest, common, no.

269, May 17, 1928 (small tree up to 10 m. high). Banks Group: Vanua Lava, alt. 200 m., rain-forest, common, no. 412, June 5, 1928 (small tree up to 12 m. high; natives say fruit is black when ripe).

Already found on Efate; also New Caledonia, Loyalty Islands.—Vernacular name “Nunginetum” (under no. 269).

***Strobilopanax neo-ebudicus* Guillaumin, sp. nov.**

Arbor parva, trunco 45 cm. diam., foliis ovato-lanceolatis (usque ad 28 cm. x 18 cm.) apice obtusis basi attenuatis petiolo brevi (1–1.5 cm. longo) suffultis, lamina sat coriacea, nervis 12–16-jugis irregulariter dispositis, venis reticulatis, stipulis inter petiolum et caulem cupulam 3 mm. altam formantibus; inflorescentia robusta, capituloso-spicata, 12 cm. longa, capitulis 1–1.5 cm. diam., bracteis late triangularibus (8 mm. x 7 mm.) obtusis, floribus parvis albis, stylis 8–12. Fructus lutei, globosi, 4 cm. diam.

*Aneityum*: Anelgauhat Bay, alt. 325 m., lower hills, in forest, no. 980 (coll. *J. P. Wilson*), Sept. 1929 (small tree to 45 cm. in diam.; leaves long, large; flowers small, white, grows off the fruit; fruit 4 cm. long, yellow).—Vernacular name “Nabrouto.”

The genus has been known so far only from New Caledonia and the Loyalty Islands.

***Schefflera* (sensu lato) sp.**

*Tanna*: Lenakel, alt. 200 m., rain-forest, common, no. 114, March 6, 1928 (small tree about 5 m. high).

***Schefflera* sp., praecedenti aff.**

*Aneityum*: Anelgauhat Bay, alt. 300 m., rain-forest, common, no. 845, March 2, 1929 (small tree up to 6 m. high; fruit cream-colored when ripe, 0.5 cm. long, about 0.5 cm. in diameter).

***Schefflera* sp.**

*Tanna*: Lenakel, alt. 200 m., rain-forest, common, no. 131, March 7, 1928 (tree about 15 m. high, 50 cm. in diam.)

***Schefflera* sp.**

*Aneityum*: Anelgauhat Bay, alt. 60 m., rain-forest, common, no. 758, Feb. 13, 1929 (small tree up to 9 m. high; fruit black when ripe, those on specimen about half-grown when collected).

***Tieghemopanax fruticosus* (L.) R. Viguier in Ann. Sci. Nat. sér. 9, iv. 61 (1906).**

*Aneityum*: Anelgauhat Bay, alt. 500 m., rain-forest, common, no. 931, March 17, 1929 (small tree up to 8 m. high; petals white; leaves boiled and eaten by the natives). *Tanna*: Lenakel, alt. 150 m., rain-forest, native gardens, common, no. 63, Feb. 24,



1928 (plant about 1 m. high; leaves yellowish green; very symmetrical plant after the style of *Kochia trichophylla*).

Already found on Efate; also Wallis, Fiji, Solomon and Bismarck Islands, New Guinea, Phillipines.

**Tieghemopanax neo-ebударum** Guillaumin, sp. nov.

Arbor usque ad 40 m. alta, foliis usque ad 30 cm. longis imparipinnatis 4-6-jugis, foliolis petiolulatis (petiolulo circa 7 mm. longo) membranaceis ovatis (5 cm. x 3 cm.) valde asymmetricis falcatisque apice acute acuminatis basi cuneatis margine integris vel subintegris; inflorescentia paniculata, foliis fere aequilonga, floribus umbellatis parvis purpureo-brunneis pedicellatis (pedicello 2-3 mm. longo medio articulato), calycis dentibus minimis, petalis carnis ovatis apice acutis intus carinatis uncinatisque, staminibus antheris ellipticis quam filamenta 2-plo longioribus, stylo 1 staminibus fere aequilongo. Fructus nigri, globoso-compressi, 3 mm. longi, stylo apice stigmatibus 2 divaricatis coronati.

**A n e i t y u m**: Anelgauhat Bay, alt. 70 m., rain-forest, common, no. 749, Feb. 12, 1929 (large tree up to 12 m. high; fruit black when ripe); alt. 600 m., rain-forest, common, no. 977 (coll. *J. P. Wilson*), Aug. 1929 (small tree up to 30 cm. in diam.; leaves medium; flower small, purplish brown; fruit a small berry). **E r o m a n g a**: Dillon Bay, alt. 300 m., rain-forest, common, no. 291, May 23, 1928 (medium-sized tree 8 m. high; leaves used as application for sore ears).— Vernacular names “Kirvano” (under no. 977) and “Narse” (under no. 291).

(To be continued)

MUSEUM NATIONAL D'HISTOIRE NATURELLE,  
PARIS.

#### FOUR NEW PALMS COLLECTED IN THE TERRITORY OF PAPUA (BRITISH NEW GUINEA)

BY L. J. BRASS

M. BURRET

**Calamus nannostachys** Burret, sp. nov.

Scandens, ut videtur, sat tenuis. Frondis vagina 5-7 mm. in diam., cirrhifera, pallide fusco-furfuracea, aculeis basi intumescensibus oblique insertis rectis 1-2 mm. longis sat tenuibus densiuscule praedita, ad apicem fere inermis. Ochrea destructa. Cirrus tenuis, unguibus simplicibus raro 2, rarissime 3 confluentibus 2-3 mm. longis armatus. Frondes parvae, 40-58 cm. longae, cirrho carentes. Petiolus 12 cm. circ. longus, aculeis fere setiformibus

parvis ad 2 mm. longis et unguibus parvis simplicibus magnitudinis in cirrho descriptae dispersis. Rhachis unguibus descriptis dispersis. Segmenta 12, quorum apicalia nonnihil 7 cm. alte connata, reliqua valde irregularia et aggregata, latiuscule lanceolata, inferne cuneata, apice sat subito contracta, frondis adultae usque ad 25 cm. circ. longa, 3.8 cm. lata, tenuia, subtus paulo pallidiora, margine setis plerisque 1 mm. usque ad 2 mm. longis ciliata, supra nervis aequivalidis 3 et ulterioribus tenuioribus dextra sinistra marginem versus 2, subtus nervis circ. 8 fere aequivalidis percursa. Nervi transversales praecipue supra optime conspicui, densi, serpentini. Spadix fusco-furfuraceus, 42 cm. longus, quorum pars ramosa circ. 8 cm., spathis primariis 2. Spathae angustae, superne modice dilatatae, fere inermes, inferne aculeis tuberculiformibus parvis, inferior oblique producta, in modo auris asini (germanice "Esels-ohren," anglice "dog's ears"), secunda longius protracta. Inflorescentiae partiales 2, inermes, spiculis aggregatis nanis. Spathae secundariae breviores, infundibuliformes. Spicae breves, crassae, circ. 1-2 cm. longae, floribus in seriebus 2 secundis dense dispositis. Spathellae bracteiformes, late triangulares. Fructus ellipsoideus i. s. circ.  $2.5 \times 1.5$  cm. Perianthium fructiferum 3 mm. altum. Calyx in lobos late ovatos incisus corolla petalis triangularibus quam sepala vix longioribus. Squamae flavidae, in seriebus verticalibus 15 dispositae, margine brevissime obscure fimbriatae, apice obtusae. Semen ambitu ovale, lateribus nonnihil compressis, 13 mm. longum, 11 mm. latum, 8 mm. crassum. Fovea chalazae profunda. Albumen aequabile. Embryo ad basin situs.

Kurandi, Eastern Division, no. 1379, May 12, 1926 (large rambler, abundant in rain-forests).—Vernacular names: "Durado," "Lawyer vine."

This species resembles in its leaves *C. papuanus* Becc. known only from sterile material, but the pinnae are more elongated and toward the base gradually cuneate, also the leaves are much more robust in all parts and the pinnae aculeate at the margin. It is most closely related to *C. Lauterbachii* Becc. which it strongly resembles in its spadix, but the fruits are arranged in two distinct series and the pinnae have several almost equally strong nerves. In regard to some recently described species the much connate terminal pinnae present a difference.

**Areca** (*Balanocarpus*) **nannospadix** Burret, sp. nov.

Palma parva, gracilis, 1-3 m. circ. alta. Caudex tenuis, baculiformis, in parte spadicifera 11-15 mm. in diam., annulis 2.5-4.7 cm. dissitis, glaber, i. s. tenuiter longitudinem secus striatus. Frondes circ. 3 m. longae. Vagina 26 cm. longa, cylindrica, extus

decidue fusco-leprosa, ceterum glabra, i. s. utrinque dense longitudinaliter costata. Petiolus fere nullus, ex vagina breviter lateque triangularis. Rhachis fusco-leprosa, plus minus glabrescens. Lamina segmentis paucis, nervis primariis multis percursis atque nonnullis unicostatis interjectis, prope rhachin inter nervos primarios praecipue versus frondis basin nonnihil reduplicato-plicata, sat tenuis. Segmenta apicalia apice destructa, reliqua visa in margine superiore 52–58 cm. longa, paulo falcata, apice sensim anguste acuminata, unicostata, a basi angustiore sensim sensim ad 1.3 cm. dilatata. Nervi primarii ad apicem et ad basin leviter curvati, ceterum fere recti, inter primarium secundariumque lamina utrinque valde dense longitudinaliter nervosa. Spadix nanus. Spatha primaria 15 cm. longa, tenuis, apice obtuse contracta, glabra, extus tenuiter striata. Bractea basi semiamplectens dimidio circ. pedunculo inserta, lanceolata, 1 cm. circ. longa. Spadix infra frondes evolutus 13.5 cm. circ. longus, florifer jam reflexus, pedunculus 1 cm. paulo superans. Rhachis florifera 3 cm., fructifera 4 cm. circ. longa, floribus ♀ ad 14 basi ima ramorum singulariter insidentibus omnino oblecta. Rami 5.5–9 cm. circ. longi, praeter florem ♀ basilarem flores ♂ tantum gerentes, ad illorum insertiones in seriebus 2 oppositis alternatim dispositas angulatim nonnihil flexuosi, et longitudinem secus angulosi, pertenues, glabri. Flores ♂ 2 juxtapositi, parvi, 4 mm. longi. Calyx 2 mm. vix in diam., sepalis perangustis acutis. Stamina 6. Antherae anguste lineares. Filamenta ad 0.75 mm. longa. Pistillodium subulatum. Flores ♀ oblongi, glabri, bractee floriferae ovato-triangulares, acutae, calyx corollae subaequilongus. Fructus immaturi visi anguste oblongi, 2 cm. × 0.7 cm., utrinque angustati. Perianthium in statu viso 11 mm. longum, corolla quam calyx conspicue altior, sepala et petala acuta, forma fere aequalia, late ovata, petala potius paululo latiora, magis contracto-producta, apice brunescente, in sepalis viridi.

Ihu, Vailala River, rain-forest, no. 921, Feb. 9, 1926 (handsome small palm, 4–8 ft. high; trunk slender, bright green; spathe yellow-white).

From the species better known to me this is well distinguished. In *A. Alicae* W. Hill ex F. v. Muell., which I have not before me, the staminate flowers are arranged in two unilaterally approximated series and said to have only three stamens; it produces several stems from one root-stock, while *A. nannospadix* apparently has solitary stems. Also *Areca torulo* Becc. and *A. niga-solu* Becc., which are based on incomplete fruiting material, might be compared, but both these species are tall palms the height

of which is stated to be 16 to 20 meters, while this is a graceful dwarf palm.

**Actinophloeus microcarpus** Burret, sp. nov.

*Palma gracilis*, 2.5–3.5 m. alta. Frondes 1.20–1.55 m. circ. longae, longe petiolatae, petiolo longe vaginante fusco-furfuraceo. Vaginae fragmentum apicale visum pro rata tenue, extus longitudinaliter dense nervosum, decidue albo-tomentosum et fusco-leprosum, lobis 2 lanceolatis nonnihil auriculatum. Petioli fragmentum visum tomento albo fere omnino delapso, vestimento leproso sub lente punctulis minutissimis fuscis conspicuo, rotundato-triangulari, supra canaliculatum, marginibus subacutis. Segmenta inter tenuiora, omnia libera, nervo primario unico percursa, in rhacheos fragmentis inferioribus plura dense per greges nonnihil dissitos disposita, sed etiam haud procul apice 2 vel pauca approximata vel sequentia irregularia, omnia anguste linearia, basilaria oblique praemorsa et plus minus irregulariter denticulata, margine superiore nonnihil producto, infima circ. 15–16 cm. longa, 12 mm. lata, sequentia longitudine evidenter, latitudine paulo accrescentia, in rhachi probabiliter dimidia 2 cm. lata, 31 cm. longa, apice protracto-bifida, apicibus anguste acuminatis, 6 cm. circ. longis, subaequalibus, segmenta apicem versus sensim longitudine et latitudine diminuentia, apicalia 9–10 cm. longa, anguste linearia, apice breviter vel brevissime biloba, omnia subtus glabra, sub lente verruculosa. Spadicis fragmentum ramis 4, rami glabri, 20 cm. circ. longi, pro rata tenues, fructiferi sicci, in dimidio 2 mm. in diam., in internodiis fere teretes, longitudinem secus leviter rugulosi, apicem versus paulo attenuati, basi bractea late rotundata et breviter apiculata suffulti. Florum glomeruli in spira laxa dispositi, ad magnam ramorum partem flore ♀ cum ♂ 2 in dimidio latere appositis, ad apicem masculo unico femineo juxtaposito. Fructus parvi, 1.3 cm. longi, oblongi, modice rostrati. Perianthium dimidium fructum altitudine aequans. Calyx humilis,  $\frac{1}{3}$  corollam vix altus, sepalis latissime rotundatis, tiutnere striatis. Corolla petalis late rotundatis, apice perbreviter apiculatis, extus striato-nervosis. Semen anguste oblongum, fibris gracilibus velatum, 5 mm. fere in diam., sulcis 5 pro rata paulo insculptum, albumine aequabili.

Loloki River, in dumps on river bank, no. 1659, June 17, 1926 (slender palm, 8–10 ft.; leaves 4–5 ft. long, with long sheathing petioles covered with brown mealy substance; inflorescence 3 panicles of various ages down below the leaves; fruits brownish, red when ripe).

Some species of this genus are known to me incompletely or

only from the description; these show in comparison with the new species the following differences: in *Actinophloeus ambiguus* Becc. the fruits are considerably larger, the pinnae though also arranged in groups are much larger and broader, also the spadices are according to the description only simply branched; in *A. propinquus* Becc. the segments are oblanceolate; *A. furcatus* Becc. has regularly arranged pinnae which are much longer and broader; in *A. Sanderianus* the branches are thick, while in the new species they are remarkably thin.

***Actinophloeus linearis* Burret, sp. nov.**

Palma amoena, gracilis, 4-5 m. alta. Petiolus 35 cm. longus, supra canaliculatus, subtus protracto-rotundatus, minute atrofusco-leproso-punctatus. Segmenta inter robustiora, ex rhacheos fragmentis 2 visis circ. dimidia 12.5 cm. longo atque apicalis 21.5 cm. longo, ut videtur, regulariter et in eadem planitie disposita, linearia, dimidia rhacheos 50 cm. fere longa, in dimidia parte inferiore 2.7 cm. circ. lata, unde superne sensim paulo sed conspicue attenuata, apice oblique praemorsa, apicalia 2 sola nervis primariis 3 percursa, apice transverse praemorsa et brevissime obtuse lobulata, linearia, undique fere aequilata, 2.3 cm. et 3 cm. circ. lata, in margine superiore 20 cm. longa, inter nervos primarios nonnihil plicata, sequentia 6 visa quam apicalia nonnihil angustiora, inter se circ. aequilata, sed longitudine accrescentia, apice biloba, 1.5 cm. latitudine modice superantia, segmenta omnia supra glabra, laevia, nitentia, subtus opaca, sub lente trichomatibus minutis, fuscis dense verruculoso-punctata. Spadix multi-ramosus, visus prob. ramus primarius 40 cm. circ. longus, ramulis simplicibus 8, rhachis partialis ut rami minute denseque fusco-leproso-squamulosa, longitudinem secus conspicue acute angulosa, ramuli visi bractea triangulari suffulti, basin versus longitudinaliter angulosi, inter minus tenues, in dimidio, flores ♀ gerentes, sicci in internodiis 2 mm. in diam. vel vix superantes, 33-30 cm. circ. longi, apice breviter tenui. Florum glomeruli ad maximam ramorum partem 3-flori, intermedio ♀, ♂ in dimidio latere juxtapositis, apicem versus flos masculus juxta femineum. Flores ♂ 4 mm. longi, oblongi. Calyx 1.5 mm. altus, sepalis late rotundatis. Petala apice obtusiuscula. Stamina circ. 15. Antherae oblongo-lineares, in dimidio dorso affixae, basi sagittatae. Pistillodium stamina vix superans, superne fere filiforme, ad basin ventricosum. Flores ♀ sepalis late rotundatis, petalis late ovatis tegentibus apice valvatis. Fructus non visi.

Lower Mori River, Eastern Division, rain-forest, no. 1566, May 28, 1926 (pretty, slender palm 12-15 ft.; several panicles down below the leaves; fruit black, fleshy).

*Actinophloeus ambiguus* Becc. is according to the description only 1.5–2 m. tall, the leaves are described as completely glabrous, while here the segments beneath are fairly densely covered with minute scales, also the spadix of *A. ambiguus* is according to the description glabrous and only simply branched. In *A. propinquus* Becc. the pinnae are oblanceolate. *Actinophloeus furcatus* Becc. has the branches of the spadix filiform, while those of *A. Sanderianus* are thick, which also does not agree with the new species. Of the other species I have a more exact knowledge.

BOTANISCHES MUSEUM  
BERLIN-DAHLEM.

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## TWO PANDANACEAE FROM THE NEW HEBRIDES COLLECTED BY S. F. KAJEWSKI

U. MARTELLI

I AM indebted to Mr. Alfred Rehder, Curator of the Herbarium of the Arnold Arboretum, for the opportunity of examining two interesting Pandanaceae collected by S. F. Kajewski in the New Hebrides. The flora of this island group is yet very little known.

*Pandanus Cominsii* Hemsley in Hooker's Icon. Pl. xxvii. t. 2654 (1900).

**B a n k s g r o u p :** Vanua Lava Island, common in rain-forest, alt. 100 m., no. 471, July 12, 1928 (up to 4 m. high, much smaller than its coastal relative; fruit red when ripe, on a spike cylindrical in shape).

This species was originally described from the Solomon Islands.

***Freycinetia tannaensis* Martelli, sp. nov.**

Caulis 7 mm. crassus ad apicem ramulorum ibique internodiis 5 mm. longis longitudinaliter rugulosis (in sicco). Folia ad apicem ramorum, rigidula, anguste linearia, sensim attenuato-acuminato-subulata, 8 mm. lata, planiuscula, utrinque longitudinaliter crebre et manifeste venosa, basi brevi tractu canaliculata et sensim dilatata, semiamplectentia, marginibus et costa media inermibus vel apicem versus remote breviterque et parce denticulatis, auriculis ad basim foliorum 3 cent. longis submembranaceis cito caducis basi 6 mm. latis lanceolato-acuminatis ambitu subconvexis apici adnatis. Inflorescentia triquetra, pedunculo crassiusculo 1 cm. diam. brevi 2.5 cm. longo, pedicellis subaequalibus 25–27 mm. longis et 3 mm. crassis levibus. Syncarpia oblonga, ellipsoidea, inaequalia, 2–4 cm. longa, 1–2 cm. crassa. Baccae circiter 8 mm. longae, parce cuneatae, in parte apicali brevi 3–4 mm. rotundata et a

papilla brevissima stigmatifera 3-4-lobulata superata; stigmata 3-4, interdum 5, annulo lobulato levi cincta. Semina 1 mm. longa, lunata, linearia-subcymbiformia, longitudinaliter minutissime costulata, raphe angusta alba, strophiole angustissimo.

Tanna Island: on Mt. Tokosh Meru, in rain-forest, alt. 800 m., very common, no. 163, March 15, 1928 (climbing up the trunks of trees).

This is a very fine and characteristic species remarkable for its narrow acuminate-subulate leaves, but chiefly for its very small seeds looking like little worms; they are curved and sickle-shaped, with a narrow but evident white raphe, while the strophiole is extremely narrow and hardly visible. Under the lens the seeds are densely marked with very minute longitudinal lines.

FLORENCE, ITALY.

## NOTES ON CHINESE PLANTS

FRANKLIN P. METCALF

**Desmodium floribundum** (D. Don) Sweet, Hort. Brit. ed. 2, 150 (1830); ed. 3, edited by G. Don, 180 (1839).—G. Don in Gen. Syst. II. 297 (1832).—Rehder & Wilson in Sargent, Pl. Wilson. II. 103 (1914).—Rehder, Man. Cult. Trees & Shrubs, 515 (1927).

*Hedysarum floribundum* D. Don, Prodr. Fl. Nep. 244 (1825).

The erroneous citation of G. Don as the author of this combination is apparently due to the fact that the 2nd edition of Sweet's Hort. Brit. was overlooked, in which the transfer to *Desmodium* was first made 2 years earlier than that of G. Don.

**Desmodium Dunnii** Merrill in Herb. Arnold Arboretum, nom. nov.

*Lespedeza lanceolata* Dunn in Jour. Linn. Soc. xxxv. 488 (1903).

*Desmodium lanceolatum* (Dunn) Schindler MSS. ex Gagnepain in Lecomte, Fl. Gen. Indo-Chine, II. 572 (1920).

There is already a *Desmodium lanceolatum* Walpers, Rep. I. 737 (1842), which was overlooked both by Schindler and by Gagnepain, hence this new name chosen by E. D. Merrill.

**Spondias chinensis** (Merrill) Metcalf, comb. nov.

*Poupartia chinensis* Merrill in Philip. Jour. Sci. xv. 245 (1919).

In describing this species as a *Poupartia* E. D. Merrill stated that it was very closely related to the only other Chinese species of this genus, *P. Fordii* Hemsley, which now has been referred as a synonym to *Spondias axillaris* Roxburgh (see Rehder & Wilson in Sargent, Pl. Wilson. II. 172 [1914]); the species that still remain in *Poupartia* according to Engler (in De Candolle, Monog. Phan. IV. 260) are from Madagascar and Mauritius. Moreover this species apparently has valvate or subvalvate petals and so should be placed in *Spondias*.

Known from Kwangtung, Fukien, Hainan and Tonkin.

*Bredia amoena* Diels in Notizbl. Bot. Gard. Mus. Berlin, ix. 197 (1924).

*Bredia chinensis* Merrill in Jour. Arn. Arb. viii. 11 (1927); **synon. nov.**

Dr. E. D. Merrill evidently overlooked the description by Diels, published 3 years earlier. The type in both cases was Hu's no. 30, from Wenchow, Chekiang.

*Schefflera Delavayi* (Franchet) Harms in Bot. Jahrb. xxix. 486 (1900).

*Heptapleurum Delavayi* Franchet in Jour. de Bot. x. 307 (1896).

Type from Yunnan (*Delavay*, no. 3865); also known from Hunan, (*Handel-Mazzetti*, no. 12251); Szechuan (*Wilson*, no. 4559; *Fang*, nos. 3241, 5713).

*Schefflera Delavayi* var. *ochrascens* Handel-Mazzetti in Anzeig. Akad. Wiss. Wien Math.-Nat. Kl. 1924, p. 120 (Pl. Nov. Sin. Forts. 27, p. 1) (1924).

*Schefflera discolor* Merrill in Lingnan Sci. Jour. vii. (1929) 318 [March 1931]; **synon. nov.**

Franchet in the original description of *Schefflera Delavayi* (l. c.) says "folia . . . subtus albo-tomentella" and the numbers listed under the species are typical. Handel-Mazzetti in describing the var. *ochrascens* only says "tomentum ochraceum." An isotype of Handel-Mazzetti's no. 4994 at the Arnold Arboretum matches very well with McClure's no. 13773 which is an isotype of Merrill's new species *S. discolor* from Kwangtung. Chun's no. 5672 and Tsiang's no. 1335, formerly identified and distributed as *S. Delavayi* (Fr.) Harms also agree perfectly with Merrill's type. Merrill states "that it is nearest to *S. Delavayi* Harms of Szechuan Prov., which has usually toothed leaves, closer and thinner pubescence and shorter racemes." This holds true for the species, except as to the racemes. On the other hand the species *S. discolor* does agree with the var. *ochrascens* Handel-Mazzetti, which was possibly overlooked by him.

There might be a question as to whether this should be of varietal or specific rank, but on account of the presence of intermediate forms it can hardly be maintained as a species. In both the variety and the species the leaves vary from entire to coarsely toothed and Schneider's no. 314 and Henry's no. 9214 from Yunnan have a tomentum intermediate between "albo-tomentella" of *S. Delavayi* and the "tomentum ochraceum" of the variety *ochrascens*.

DISTRIBUTION OF THE VARIETY: Y u n n a n : *Handel-Mazzetti*, no. 4994 (isotype of var.) and no. 9553. K w a n g t u n g : *McClure*, no. 13773 (Arnold Arboretum; isotype of *S. discolor* Merrill); also *Chun*, no. 5672 and *Tsiang*, no. 1335. Schneider's no. 314 and



Henry's no. 9214 from Yunnan also approach this variety. (All in Herb. Arnold Arboretum.)

*Xylosma congestum* (Lour.) Merr.<sup>1</sup> var. *kwangtungensis* Metcalf, var. nov.

A typo differt foliis elongato-ellipticis vel oblanceolatis grosse serratis supra pallidioribus subtus plerumque castaneo-brunneis.

**K w a n g t u n g**: Honan Island, *Levine*, nos. 172 and 177 (syn-types), 279 and 365, ex Herb. Canton Christian University; Canton and vicinity, *Levine*, nos. 18, 1809, 2084, 3261, all ex Herb. Canton Christian University; Peiyunchan, *Tsiang*, no. 1594, ex Herb. Sun Yatsen University; Lofaushan, *W. Y. Chun*, no. 1741 and *Tsiang*, no. 1680, both ex Herb. Sun Yatsen University.

This variety differs from the type in the elongate elliptical or oblanceolate coarsely serrate leaves, usually paler above and chestnut-brown beneath.

**Vaccinium mandarinorum** Diels in Bot. Jahrb. xxix. 516 (1901).

*Vaccinium Donianum* Maximowicz in Mém. Biol. 1. 608 (1872); in Bull. Acad. Sci. St. Pétersb. xviii. 43 (1873); in part, in note under *V. bracteatum* Thbg.—Hemsley in Jour. Linn. Soc. xxvi. 15 (1889) in note under *V. bracteatum*.—Rehder & Wilson in Sargent, Pl. Wilson. 1. 557 (1913), exclusive of synonyms. *V. affine* Wight, *Epigynium affine* Klotzsch and *E. Donianum* Klotzsch.—Non *V. Donnianum* Wight, nec *V. Donianum* Miquel).

*Vaccinium parvibracteum* Hayata in Ic. Pl. Formos. iii. 128 (1913).

*Vaccinium Donianum* Wight var. *hangchouense* Matsuda in Bot. Mag. Tokyo xxvi. 319 (1912).

*Vaccinium hangchouense* (Matsuda) Komatsu in Ic. Pl. Koisikav. iii. 95, t. 193 (1917); **synon. nov.**

All the Chinese material referred by most authors to the Himalayan *V. Donnianum* Wight (usually spelled *V. Donianum* Wight) is really not this species at all, but a distinct Chinese species with good characters which, however, have been mostly overlooked. This discovery was made while attempting to verify *V. parvibracteum* Hayata, which was described from Mt. Kosan, Fukien. This species was listed by Komatsu (l. c.) as a synonym of his *V. hangchouense* which he raised to a species from the variety originally described by Matsuda. In Matsuda's original description (l. c.) of this variety under *V. Donnianum* Wight, he said that the variety could be distinguished by having a glabrous non-ciliated calyx and

<sup>1</sup>The transfer of the specific epithet from *Apactis japonica* Thunberg (the oldest name, 1788) to *Xylosma* can not be made as there already exists a *Xylosma japonica* (Walpers) A. Gray. This is according to the International Rules, even if the second name is actually a synonym of the first as in this case. The specific epithet of the next oldest name therefore should be used which is *Croton congestum* Loureiro. Koidzumi (in Tokyo Bot. Mag. xxxix. 316 [1925] and Nakai (Fl. Sylv. Kor. xvii. 51, t. 14 [1928]) use the combination *Xylosma Apactis* (Thunberg) Koidzumi for this plant, but I see no justification under the International Rules of abandoning the next oldest specific name and adopting this generic name for this species.

a corolla glabrous within and without, and stated that the species *V. Donnianum* had a ciliated calyx and a corolla glabrous without but villose within, as shown by Wight's Icones, t. 1191. When I examined the material named *V. Donnianum* I soon found that almost all had a glabrous non-ciliated calyx and a glabrous corolla within and without. We have therefore 2 distinct species, one *V. Donnianum* of Wight from the Himalayan region and another which is distinctly Chinese. To make sure of this, topotype material was critically examined in the Gray Herbarium. The only two sheets there from Khasia (type locality) and East Bengal, as well as two others at Arnold Arboretum had a distinctly ciliated calyx and a corolla villous within, agreeing perfectly with the original descriptions and plate of Wight.

The next question was what should the Chinese material be named. It is certainly of specific rank. The oldest name applied to this species is that of *V. mandarinorum* Diels. *Vaccinium parvibracteam* of Hayata is much later. Unfortunately Matsuda who actually first noticed the difference between the real *V. Donnianum* and the Chinese species separated the latter much later (1912) and only as a variety. Diels (l. c.) apparently did not get hold of the real distinguishing characters but distinguished it from the Himalayan *V. Donnianum* Wight by broader leaves and shorter pedicels. Rehder and Wilson reduced this rightly to the Chinese *V. Donnianum*, but did not separate it from the true Himalayan species.

A cotype of Diels *V. mandarinorum* was examined (Henry, no. 5807<sup>B</sup>, at the Gray Herbarium) with which the Chinese material agrees. In making dissections of these two species additional characters were found which may also help in identification. A synopsis of the differences are given below:

#### *Vaccinium Donnianum* Wight

Calyx ciliate; corolla villose within, glabrous without; staminal appendages 1.2–1.4 mm. long and horns  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of anther (minus the appendage).

DISTRIBUTION: Wight (l. c.) lists Khasia by Griffith. K h a s i a: 3–5000 ft., *Hooker f. & Thomson*, Herb. Ind. Or. (Gray Herbarium); same locality 5000 ft., *Ruse*, no. 146, in 1923 (Arnold Arboretum). E a s t B e n g a l: Herb. E. India Co., *Griffith*, no. 3457/1 (Gray Herbarium). B u r m a: Mergin, 1800 m., *Parker*, no. 3108 (Arnold Arboretum). N a g a H i l l s: 4500 ft., *Prain*, May 10, 1886. (Arnold Arboretum).

Wilson's no. 1010 from Patung, W. China, approaches this, having

a pubescent, not ciliate calyx and a corolla subglabrous to slightly pubescent within, or may not be this species. Henry's no. 11917 from Szemao Mts., 5000 ft., Yunnan, appears to be this species having a ciliate calyx and pubescent corolla within. It represents apparently the only specimen of this species from China proper. Other sheets collected from these same mountains are distinctly *V. mandarinorum* Diels.

*Vaccinium mandarinorum* Diels

Calyx not ciliate; corolla glabrous within and without; staminal appendages about 3 mm. long and horns about same length as anther (minus the appendage).

DISTRIBUTION: Diels (l. c.) lists only Henry's no. 5807<sup>B</sup> from Hupeh (Berlin; cotype seen in Gray Herbarium). Many specimens examined from Fukien, Chekiang, Kiangsi, Anhwei, Kiangsu, Hunan, Hupeh, Szechuan, Yunnan and E. Tibet.

***Vaccinium Donnianum* Wight, Icon. IV<sup>1</sup> 5, t. 1191 (1845-46); Calcutta Jour. Nat. Hist. VIII. 174 (1847).**

*Vaccinium affine* Wight, Icon. t. 1190 (1845-46).

*Vaccinium Donianum* Wight apud Clarke in Hooker, Fl. Brit. Ind. III. 453 (1882).—Matsuda in Tokyo Bot. Mag. XXVI. 319 (1912) excl. var.—Non *V. Donianum* Maximowicz, nec *V. Donianum* Miquel.

The original spelling in Wight's Icones, in two places and in the Calcutta Journal was "Donnianum." Why "Donianum" was taken up by the Kew Index is a mystery. Others followed this error. Possibly it was on account of *V. Donianum* Miquel. The species was probably named after Donn and not Don.

There are a number of varieties grouped under *V. Donnianum* Wight by various authors. All this varietal material, however, is more closely allied to the Chinese species *V. mandarinorum* Diels, having a glabrous calyx and glabrous corolla. For that reason all these varieties should be transferred from *V. Donnianum* Wight to *V. mandarinorum* Diels. These combinations are made below:

***Vaccinium mandarinorum* Diels var. *laetum* (Diels) Metcalf, comb. nov.**

*Vaccinium laetum* Diels in Bot. Jahrb. XXIX. 516 (1901).

*Vaccinium Donianum* Wight var. *laetum* (Diels) Rehder and Wilson in Sargent, Pl. Wilson. I. 558 (1913).

Szechuan only.

***Vaccinium mandarinorum* var. *austrosinense* (Hand.-Mazz.) Metcalf, comb. nov.**

*Vaccinium Donianum* Wight var. *austrosinense* Handel-Mazzetti in Anzeig. Akad. Wiss. Wien Math.-Nat. Kl. 1921, p. 176 (Pl. Nov. Sin. Forts. 13, p. 1) (1921)

Type from Hunan, also known from Fukien, Kwangtung and Kiangsi.

The type of *V. Donianum* var. *brachybotrys* Franchet was not seen but I believe it is better here to follow Handel-Mazzetti (Anzeig. Akad. Wiss. Math.-Nat. Kl. 1925, p. 146 [Pl. Nov. Sin. Forts. 35, p. 4] [1925]) who has raised this to a species.

**Xolisma ovalifolia** (Wallich) Rehder var. **hebecarpa** (Franchet and Hemsley) Metcalf, comb. nov.

*Pieris ovalifolia* D. Don var. *hebecarpa* Franchet in litt. in Hemsley, Jour. Linn. Soc. xxvi. 17 (1889).

DISTRIBUTION: C h e k i a n g: Meichi (*Poli* ex Franchet) in Hemsley, l. c.; Ningpo, *Macgregor*, in 1908 (Arnold Arboretum).

DEPARTMENT OF BIOLOGY, LINGNAN UNIVERSITY,  
CANTON, CHINA.

## NOTES ON THE LIGNEOUS PLANTS DESCRIBED BY H. LÉVEILLÉ FROM EASTERN ASIA<sup>1</sup>

ALFRED REHDER

### SAXIFRAGACEAE

**Philadelphus pekinensis** Ruprecht in Bull. Phys. Math. Acad. Sci. St. Pétersb. xv. 365 (1857); in Mém. Biol. II. 543 (1858).

*Deutzia Chanetii* Léveillé in Fedde, Rep. Spec. Nov. ix. 451 (1911);  
**synon. nov.**

CHINA. C h i l i : "Montagnes de Kou-ping," very rare, *L. Chanet*, no. 416, June, 1909 (holotype).

**Philadelphus Henryi** Koehne in Fedde, Rep. Spec. Nov. x. 126 (1911).

*Deutzia mollis* var. *erythrocalyx* Léveillé in herb.

CHINA. Y u n n a n : "rochers du mont à Pe-long-tsin, alt. 3280 m." *E. E. Maire*, June (holotype).

The leaves of Maire's specimen are more densely pubescent beneath than in typical *P. Henryi*. I have been unable to find the place of publication of Léveillé's name, probably it is only a manuscript name.

**Philadelphus Magdalenae** Koehne in Mitt. Deutsch. Dendr. Ges. XIII. 83 (1904).

*Philadelphus coronarius* var. *chinensis* Léveillé, Fl. Kouy-Tchéou, 389 (1916), nom. nudum; **synon. nov.**

CHINA. K w e i c h o u : "Tou-chan," *J. Cavalerie* (herb. Bodinier, no. 2343), May 1898 (holotype).

Cavalerie's specimen represents apparently a glabrescent form of

<sup>1</sup> Continued from vol. x. 196 (1929).

*P. Magdalenae* Koehne. The leaves are rather densely setose-strigose above as in the type, but beneath they are glabrous except the setose-strigose veins.

***Deutzia lancifolia*** Rehder in Sargent, Pl. Wilson. i. 147 (1912).—Léveillé, Fl. Kouy-Tchéou, 387 (1915).

*Styrax Esquirolii* Léveillé in Fedde, Rep. Spec. Nov. ix. 446 (1911); Fl. Kouy-Tchéou, 387 (1915), pro synonym.

*Deutzia Esquirolii* Léveillé, Fl. Kouy-Tchéou, 387 (1915), pro synonym.

*Deutzia Chaffanjoni* Léveillé, l. c. (1915), pro synonym.

CHINA. K w e i c h o u : "Lou-tsong-kouan, Kien-tin-chan," *J. Esquirol*, no. 22, May 2, 1904 (holotype of *Styrax Esquirolii* and *Deutzia Esquirolii*); "environs de Kouy-yang, monts du Collège," *J. Chaffanjon* in herb. Bodinier, no. 2223, April 1898 (holotype of *D. lancifolia* [in herb. Paris] and of *D. Chaffanjoni* [in herb. Léveillé]).

Apparently neither *D. Esquirolii* nor *D. Chaffanjoni* which is based on the same number as *D. lancifolia* were published before Léveillé cited them as synonyms of *D. lancifolia*.

***Deutzia cyanocalyx*** Léveillé in Fedde, Rep. Spec. Nov. x. 438 (1912); Fl. Kouy-Tchéou, 386 (1915).

CHINA. K w e i c h o u : Kouy-Yang, monts du Collège, *J. Cavalerie*, no. 1196, April 1903 (holotype).

This species is closely related to *D. lancifolia* Rehd., but differs chiefly in the much larger and broader leaves, up to 10.5 cm. long and 3 cm. broad, and in the larger flowers.

***Deutzia coreana*** Léveillé in Fedde, Rep. Spec. Nov. viii. 283 (1910).—Rehder in Sargent, Pl. Wilson. i. 22 (1911).—Nakai, Fl. Sylv. Kor. xv. 60, t. 16 (1926).

KOREA: in Monte des Diamants, *U. Faurie*, no. 364, June 1906 (holotype; isotype in herb. Arnold Arboretum).

This is a very distinct species constituting the subsect. *Coreanae* Rehd. of sect. *Eudeutzia* Engl.

***Deutzia glabrata*** Komarov in Act. Hort. Petrop. xxii. 433 (1903).—Rehder in Sargent, Pl. Wilson. i. 24 (1911).—Nakai, Fl. Sylv. Kor. xv. 63 (1926).

*Deutzia Fauriei* Léveillé in Fedde, Rep. Spec. Nov. viii. 283 (1910).

*Crataegus Pomasae* Léveillé in Fedde, Rep. Spec. Nov. xii. 189 (1913); synonym. nov.

KOREA: "in rupibus Montis des Diamants" [Kogo-san], *U. Faurie*, no. 360, June 24, 1906 (holotype of *D. Fauriei*); Pomasa, *U. Faurie*, no. 362, May 21, 1906 (holotype of *Crataegus Pomasae*).

***Hydrangea Davidii*** Franchet in Nouv. Arch. Mus. Paris, sér. 2, viii. 227 (Pl. David. ii. 44) (1885).

*Hydrangea Arbostiana* Léveillé in Bull. Acad. Intern. Geog. Bot. XII. 115 (1903).—Rehder in Sargent, Pl. Wilson. I. 41 (1911).

*Hydrangea Davidi* Franch. var. *Arbostiana* Léveillé, Fl. Kouy-Tchéou, 387 (1915).

CHINA. K w e i c h o u : Kouy-Yang, Mont du Collège ça et la dans la montagne," *E. Bodinier*, no. 1694, June and July 21, 1897 (holotype of *H. Arbostiana*); Pin-fa, Yuin-ou-chan, *J. Cavalerie*, no. 39, July 15, 1902 (paratype of *H. Davidi* var. *Arbostiana*); Meiting-chan, *J. Cavalerie*, no. 49, July 1902 (ex Léveillé; paratype of *H. Davidi* var. *Arbostiana*).

*Hydrangea Arbostiana* does not seem to differ at all from *D. Davidi* and can not be maintained even as a variety.

***Hydrangea paniculata*** Siebold in Nov. Act. Acad. Leop.-Carol. XIV. pt. II. 690 (Syn. Hydrang.) (1829).

*Hydrangea Kamienskii* Léveillé in Bull. Acad. Intern. Geog. Bot. XII. 115 (1903); Fl. Kouy-Tchéou, 388 (1915).—Rehder in Sargent, Pl. Wilson. I. 41 (1911).—**Synon. nov.**

*Hydrangea sachalinensis* Léveillé in Fedde, Rep. Spec. Nov. VIII. 282 (1910); **synon. nov.**

S a g h a l i n : "in silvis Korsakof," *U. Faurie*, no. 439, Oct. 1908 (holotype of *H. sachalinensis*).

CHINA. K w e i c h o u : "monts de Lou-tsong-koan," *E. Bodinier*, no. 1661, July 12, 1897 (syntype of *H. Kamienskii*); "Gan-pin, environs de Touchang," *L. Martin & E. Bodinier*, no. 1661bis, Aug. 1897 (ex Léveillé; syntype of *H. Kamienskii*).

***Hydrangea strigosa*** Rehder in Sargent, Pl. Wilson. I. 31 (1911).

*Premna Merinoi* Léveillé, Sert. Yunnan. 3 (1916); Cat. Pl. Yunnan, 278 (1917); **synon. nov.**

*Hydrangea villosa* Rehd. var. *Mairei* Léveillé, Cat. Pl. Yunnan, 254 (1917); **synon. nov.**

CHINA. Y u n n a n : "brousses des montagnes a Siai-Ho, 2700 m.," *E. E. Maire*, May-July 1912 (holotype of *Premna Merinoi*); "brousses des monts Io-Chan et Kiao-Me-Ti, 3100-3300 m.," *E. E. Maire*, July-Oct. 1912 (holotype of *H. villosa* var. *Mairei*).

The specimen of *Premna Merinoi* bears only young inflorescences with the small lanceolate deciduous bracts still present and conspicuous, which probably induced Léveillé to refer the plant to *Premna*.

***Hydrangea Rosthornii*** Diels in Bot. Jahrb. XXIX. 374 (1900).—Léveillé, Fl. Kouy-Tchéou, 388 (1915).

*Hydrangea Maximowiczii* Léveillé in Bull. Acad. Intern. Geog. Bot. XII. 114 (1903).

CHINA. K w e i c h o u : "environs de Gan-pin, grand rocaille," *L. Martin & E. Bodinier*, July 11, 1897, July 1899 (ex Léveillé; syntypes of *H. Maximowiczii*); "environs de Tou-chan," *J. Cava-*

lerie, no. 22, July 1897 (syntype of *H. Maximowiczii*); Pin-fa, route de Tzai-kin, *J. Cavalerie*, no. 69, July 15, 1902.

I have not seen the specimen from Gan-pin, but Cavalerie's no. 22 and his 69 which is not cited in the original description, but in the *Flore de Kouy-Tchéou*, and bears on the original field label the name "*Hydrangea Maximowiczii* Lévl. ou sp. nov." and on another label the name "*Hydrangea Rosthornii* Diels," both in Lévillé's handwriting. Cavalerie's no. 22 resembles in its narrower oblong leaves (about 13 x 45 cm.) somewhat *H. strigosa*, but in the ciliate serration of the leaves and in the more villous pubescence it agrees with *H. Rosthornii*.

***Hydrangea petiolaris*** Siebold & Zuccarini, *Fl. Jap.* i. 106, t. 54 (1835).—Rehder in Sargent, *Pl. Wilson.* i. 41 (1911).—Nakai, *Fl. Sylv. Kor.* xv. 71, t. 22 (1926).

*Hydrangea tiliaefolia* Lévillé in Fedde, *Rep. Spec. Nov.* viii. 282 (1910).

KOREA. Q u e l p a e r t : "in dumosis," *U. Faurie*, no. 358, Oct. 1906; "in rupibus Yang-keuni," *U. Faurie*, no. 809, May 14, 1908; "in silvis," *U. Faurie*, no. 1654, July 1907; (all syntypes of *H. tiliaefolia*).

Of no. 809 I have seen the original specimen in the Edinburgh herbarium with the name in Lévillé's handwriting; of the other two numbers there are isotypes in the herbarium of the Arnold Arboretum.

***Schizophragma hydrangeoides*** Siebold & Zuccarini, *Fl. Jap.* i. 58, t. 26 (1835).—Nakai, *Fl. Sylv. Kor.* xv. 73, t. 24 (1926).

*Hydrangea Taquetii* Lévillé in Fedde, *Rep. Spec. Nov.* viii. 282 (1910).

KOREA. Q u e l p a e r t : "in muris agrorum Hogno," *E. Taquet*, no. 807, May 12, 1908 (syntype); "in silvis Yang-kami," *E. Taquet*, no. 808, May 10, 1908 (syntype).

Of both numbers there are isotypes in the herbarium of the Arnold Arboretum and of no. 807 I have also seen the original specimen now in the Edinburgh herbarium.

***Dichroa febrifuga*** Loureiro, *Fl. Cochinchin.* 301 (1790).

*Callicarpa Esquirolii* Lévillé in Fedde, *Rep. Spec. Nov.* ix. 456 (1911); *Fl. Kouy-Tchéou*, 439 (1915); not Lévillé in Fedde *Rep. Sp. Nov.* ix. 325; **synon. nov.**

*Dichroa Henryi* Lévillé, *Sert. Yunnan.* 1 (1916); *Cat. Pl. Yunnan*, 254 (1917); **synon. nov.**

CHINA. K w e i c h o u : "Ouang-mou," *J. Esquirol*, no. 72, June 1904 (holotype of *Callicarpa Esquirolii*). Y u n n a n : Sze-mao, eastern mts., 5000 ft., *A. Henry*, no. 11050 (holotype of *D. Henryi*).

Of Henry's no. 11050 I have seen an isotype in the herbarium of the Arnold Arboretum and I also saw no. 11050B; both are identical,

but their leaves are denticulate and not "grosse dentata" as described by Lévillé. Nevertheless I consider *D. Henryi* identical with *D. febrifuga* which varies considerably in the shape, size, and serration of its leaves.

*Itea yunnanensis* Franchet in Jour. de Bot. x. 268 (1896).

*Itea Bodinieri* Lévillé in Fedde, Rep. Spec. Nov. ix. 457 (1911); Fl.

Kouy-Tchéou, 388 (1917), pro synonym. *I. Esquirolii* Lévl.; **synon. nov.**

*Itea Esquirolii* Lévillé, Fl. Kouy-Tchéou, 388 (1917); **synon. nov.**

CHINA. K w e i c h o u : Kiang-ti, *J. Esquirol*, no. 1501; "environs de Gan-Pin, dans la grande rocaille près de ville," *L. Martin & E. Bodinier*, no. 1625 (ex Lévillé; syntype); "environs de Kouy-Yang, mont du Collège, à la grande Cascade," *E. Bodinier* [no. 1645 ?], May 26, 1899 (ex Lévillé); Pin-fa, *J. Cavalerie*, no. 1082, June 23, 1903 (ex Lévillé; all syntypes of *I. Bodinieri*).

In his Flore de Kouy-Tchéou the author changes without apparent reason the name *Itea Bodinieri* to *I. Esquirolii* and cites the former name as a synonym; the syntypes cited are the same. Lévillé distinguishes his species chiefly by the pilose flowers from *I. yunnanensis* which typically has a glabrous calyx and pedicels, but a form with short-pilose calyx and pedicels, while differing in no other character from the typical form, seems not uncommon. In the Arnold Arboretum herbarium I find 19 Yunnan specimens with glabrous calyx collected by *G. Forrest*, *C. Schneider*, *J. F. Rock*, *E. E. Maire* and *H. Handel-Mazzetti*, and only the following specimens with pubescent calyx: *A. Henry*, no. 9297, *Siméon Ten*, no. 91, *H. Handel-Mazzetti*, no. 10197, *J. F. Rock*, no. 3095 and *G. Forrest*, no. 19240. Besides there is one specimen from western Szechuan (*E. H. Wilson*, no. 325) with pubescent calyx. *Itea ilicifolia* Oliv. which does not seem to occur in Yunnan and western Szechuan has its calyx always glabrous.

*Ribes laurifolium* Janczewski in Bull. Acad. Sci. Cracovie, sér. Sci. Nat. 1910, p. 79 (1910).

*Cavaleria enkianthoidea* Lévillé in Fedde Rep. Spec. Nov. xi. 66 (1912);

Fl. Kouy-Tchéou, 389 (1917), pro synonym. *Ribes pachysandroidea*;

**synon. nov.**

*Ribes pachysandroidea* Lévillé, Fl. Kouy-Tchéou, 389 (1917); non *R. pachysandroides* Oliver.

CHINA. K w e i c h o u : Kin-Tchen-Hia, depression de terrain *J. Cavalerie*, no. 3183, April 8, 1907 (holotype of *Cavaleria enkianthoidea*).

Lévillé in 1917 had reduced his *Cavaleria enkianthoidea* originally published as a new genus of Hamamelidaceae to a synonym of *Ribes pachysandroides* Oliv. which in turn is a synonym of *R. Davidi* Franch., but Cavalerie's no. 3183 belongs to *R. laurifolium* Jancz. and not to *R. Davidi* Franch.



## PITTOSPORACEAE

**Pittosporum glabratum** Lindley in Jour. Hort. Soc. London, I. 230 (1846).—Léveillé, Fl. Kouy-Tchéou, 315 (1915).

*Pittosporum Cavaleriei* Léveillé in Fedde, Rep. Spec. Nov. XI. 492 (1913); Fl. Kouy-Tchéou, 315 (1915), pro synonym. *P. glabrati*.

*Pittosporum trigonocarpum* Léveillé in Fedde, Rep. Spec. Nov. XI. 492 (1913); **synon. nov.**

CHINA. K w e i c h o u : "Pin-fa, près ruisseaux," *J. Cavalerie*, no. 1746, April 5, 1904 (ex Léveillé; holotype of *P. Cavaleriei*); bois à 100 kil. sud de Tin-fan, *J. Cavalerie*, no. 1857, Nov. 1904 (holotype of *P. trigonocarpum*).

**Pittosporum truncatum** E. Pritzl in Bot. Jahrb. XXIX. 378 (1900).

*Euonymus provicarii* Léveillé, Cat. Pl. Yunnan. 34 (1915); **synon. nov.**

CHINA. Y u n n a n : "collines rocheuses de Pi-ka-tong," 2550 m., *E. E. Maire*, May 1912 (holotype of *Euonymus provicarii*).

The leaves of Maire's specimen are not quite typical for *P. truncatum*; they are generally oblong-obovate and rather larger, but the flowers agree well with those of *P. truncatum*.

## HAMAMELIDACEAE

**Distylium chinense** (Fr.) Diels in Bot. Jahrb. XXIX. 380 (1900).—Handel-Mazzetti, Symb. Sin. VII. 53 in nota (1929).

*Distylium Dunnianum* Léveillé in Fedde Rep. Spec. Nov. XI. 67 (1912); Fl. Kouy-Tchéou, 194 (1914); **synon. nov.**

*Myrica Seguini* Léveillé in Fedde, Rep. Spec. Nov. XII. 537 (1913).

CHINA. K w e i c h o u : Lo-fou, *J. Cavalerie*, no. 3551, March 1909 (holotype of *D. Dunnianum*); without precise locality, *J. Cavalerie*, no. 3929 (holotype of *Myrica Seguini*).

In the shape of its leaves *D. chinense* shows considerable variation; in Hupeh the prevailing form has obovate to obovate-oblong leaves with one to three teeth near the apex on each side, while the form occurring in Kweichou here represented by the two specimens cited above and Handel-Mazzetti's nos. 10272, 10692 and 10810, has generally longer oblong to oblong-oblong-entire leaves up to 7.5 cm. long, but Wilson's 2961 and 3537 (partly) from near Ichang also have entire narrower leaves though shorter, and approach the Kweichou form, besides they are more or less pubescent on the under side of the leaves. Cavalerie's no. 3929 is intermediate between the two forms, while his no. 3551 represents an extreme long-leaved form.

**Corylopsis alnifolia** (Lévl.) Schneider in Fedde Rep. Spec. Nov. XII. 379 (1913).—Léveillé, Fl. Kouy-Tchéou, 193 (1914).

*Berchemia alnifolia* Léveillé in Fedde, Rep. Spec. Nov. X. 433 (1912).

CHINA. K w e i c h o u : "route de Pin-fa à Kouy-Yang, mon-

tagnes," *J. Cavalerie*, no. 2712, April 1905 (holotype of *Berchemia alnifolia*).

*Corylopsis Wilsonii* Hemsley in Hooker, Ic. Pl. xxvii. t. 2819 (1906).

*Corylopsis Cavaleriei* Léveillé in Fedde, Rep. Spec. Nov. xi. 295 (1912); Fl. Kouy-Tchéou, 193 (1914); **synon. nov.**

CHINA. K w e i c h o u : Pin-fa, *J. Cavalerie*, no. 1098, June 23, 1903, arbre (holotype of *C. Cavaleriei*).

(To be continued)

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## A STUDY OF CHROMOSOME NUMBER IN TWO GENERA OF BERBERIDACEAE: MAHONIA AND BERBERIS

HAIG DERMEN

THE STUDY of the chromosome situation in both *Mahonia* and *Berberis* was undertaken to determine the cytological relationships between these two genera and among species in each genus. There are supposed to be some 50 species of *Mahonia* and 175 species of *Berberis*. Rehder (1927) describes 6 *Mahonia* and 48 *Berberis* species hardy in temperate North America. He also gives some interspecies hybrid forms, and one intergeneric form which has never been known to bloom. In the Arnold Arboretum there are 2 species of *Mahonia*, some 50 species of *Berberis* and the intergeneric hybrid just mentioned.

THE GEOLOGICAL HISTORY AND THE PRESENT DISTRIBUTION OF MAHONIA AND BERBERIS. Some five fossil species have been described that were unearthed from tertiary formation in the south of France, northern Italy and Switzerland which showed considerable resemblance to present forms, especially to *M. Aquifolium* and to other species similar to it (Engler & Prantl, 1891). It is a curious fact, that at present not a single species of *Mahonia* and one only of *Berberis*, namely *B. vulgaris*, is found in Europe. *Mahonia* species are found in North and Central America and Eastern and Southern Asia, and *Berberis* species in Eastern and Central Asia, in South America, a few in North America and North Africa and one in Europe (Rehder, 1927).

CYTOLOGICAL STUDIES. Two species of *Mahonia* and 42 species of *Berberis* were studied. Young anthers were smeared on slides in aceto-carmin solution and the chromosomes of pollen mother cells were stained and counted. The time of development of buds for study began in the early part of April and lasted until the end of May. Buds from *B. aggregata* were not ready until June 19.

As the meiotic chromosomes in *Mahoberberis Neuberti*, the intergeneric hybrid, could not be studied, since this plant does not develop buds, it was necessary to make the study from somatic chromosomes. We tried to get root-tips from cuttings of this and of its parent species but were unsuccessful. Later roots were dug up from the arboretum specimens and root-tips were obtained and fixed in killing solution. Root-tips were fixed in a mixture of 1 part 0.5% chromic acid and 1 part 5% commercial formalin (as stock solutions these are kept separate) in small vials for 1 hour or longer depending on the size of the root-tips and were directly transferred into absolute alcohol for 1 hour or longer. This alcohol is replaced with fresh alcohol for the same length of time, then xylol for 1 hour, placed in the oven in equal parts of xylol and soft paraffin until the paraffin melts, put through two changes of melted hard paraffin, and is then embedded and sectioned. For staining, crystal violet-iodine was used. If the material is fixed in the morning, by evening it can be ready for study. This technique has given excellent results both for chromosome counts and for the study of chromosome structure without causing plasmolysis or shrinkage of cells.

**CHROMOSOME COUNTS.** In the 44 species studied all but one had 14 pairs of chromosomes; one had 28 pairs, namely *B. turcomanica integerrima*, this being a tetraploid varietal form. The following are the species studied by the author: 2 *Mahonia* species: *Aquifolium*, *repens*; 42 *Berberis* species: *aemulans*, *aggregata*, *amurensis*, *amurensis japonica*, *brachypoda*, *canadensis*, *candidula*, *chinensis*, *circumserrata*, *dasytachya*, *diaphana*, *dictyophylla*, *Dielsiana*, *Fendleri*, *Gagnepainii*, *Gilgiana*, *Henryana*, *heteropoda*, *Julianae*, *koreana*, *laxiflora oblanceolata*, *Mouillacana*, *notabilis*, *ottawensis*, *Poirii*, *polyantha*, *provincialis* var., *Purdomii*, *Rehderiana*, *Sargentiana*, *Sieboldii*, *thibetica*, *Thunbergii*, *Thunbergii Maximowiczii*, *Thunbergii minor*, *Tischleri*, *turcomanica integerrima* (28 pairs), *Vernae*, *verruculosa*, *vulgaris*, *vulgaris atropurpurea*, *yunnanensis*.

The following 10 species were studied by Tischler (1931) all but one with 14 pairs of chromosomes. One was a tetraploid species: *Mahonia Aquifolium*, *M. japonica*, *M. repens*, *Berberis Darwinii*, *B. empetrifolia*, *B. integerrima*, *B. Thunbergii*, *B. Veitchii*, *B. vulgaris*, *B. buxifolia* (28 pairs).

No exact measurements were taken but microscopic observation showed all to have apparently the same size of chromosomes. This point was readily proven when the somatic chromosomes of *M. Aquifolium*, *B. vulgaris*, and *Mahoberberis Neubertii* (the generic hybrid between the two) were studied and drawn under the same magnification.

## SIZE OF POLLEN GRAIN

The measurements of pollen grains of a group of plants (Table I) showed some differences but were not considered very striking. The shape of pollen grains of all species of both genera were the same and in no particular detail were they found different. There was no correlation between chromosome number and pollen grain size; therefore it is considered impractical to try to determine by

TABLE I—POLLEN GRAIN MEASUREMENTS AND PERCENTAGE OF STERILITY

Name of species	Size	Sterility %
<i>M. Aquifolium</i> .....	52.8	65
<i>M. repens</i> .....	48.4	50
<i>B. diaphana</i> .....	52.8	4
<i>B. turcomanica integerrima</i> .....	52.8	10
<i>B. circumserrata</i> .....	55	nil
<i>B. Gagnepainii</i> .....	59.4	30
<i>B. verruculosa</i> .....	57.2	1
<i>B. Vernae</i> .....	41.8	5
<i>B. brachypoda</i> .....	50.6	5
<i>B. laxiflora</i> var.....	48.4	40
<i>B. vulgaris</i> .....	45.1	20
<i>B. heteropoda</i> .....	50.6	12
<i>B. notabilis</i> .....	47.5	1
<i>B. provincialis serrata</i> .....	44	30
<i>B. Tischleri</i> (flowers in three).....	55	20
“ “ (flowers in cluster).....	46.2	15
<i>B. Julianae</i> .....	50.6	7
<i>B. Sargentiana</i> .....	48.4	7
<i>B. Sieboldii</i> .....	52.8	1
<i>B. dasystachya</i> .....	46.2	3
<i>B. Fendleri</i> .....	48.4	5

pollen grain measurement which are tetraploid and which are diploid forms. Some plants showed high percentage of sterility. *B. notabilis*, a hybrid form from a cross between *B. vulgaris* and *B. heteropoda*, has practically no sterile pollen grains and its parent species show quite a high percentage of sterility. Pollen grains of *B. notabilis* measured 47.5  $\mu$  in diameter, while pollen grains of *B. vulgaris* measured 45.1  $\mu$  and *B. heteropoda* 50.6  $\mu$ , the hybrid having pollen grains intermediate in size.

## SPECIES AND GENERIC HYBRIDS

In the Arboretum there are two or three plants of *Mahoberberis Neubertii* that vary from each other somewhat and they all are considered to be hybrids between *M. Aquifolium* and *B. vulgaris*. These hybrids have never been known to develop flowers.

All the above evidence indicates convincingly that these two